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COMPUTER WEEKLY

Keen students win computer prizes

DRIVING a solar-powered fighting crocodile programmed never to bite British soldiers was one of the seven applications for computers which won eight-year-old John Boggis a Sinclair ZX80 last week, in a competition organised by the magazine Educational Computing.

His other ideas included a football trainer, a machine for reading to old people, and a computer that designed other computers, on which the controls included buttons marked "explain" and "don't".

The 10 prizes, of which eight were computers, were awarded during the Computer Fair held by the Association of London Computer Clubs at the Polytechnic of North London. The main prize of a Research Machines RM380Z was won by Marcus Morris, a student at a teacher training college, for a complex biological simulation involving three species.

The youngest individual winner was six-year-old Paul Galpin, whose entry showed his computer reminding his father his pocket money was due, while a group entry from Norton Glebe Infants School in Cleveland showed how much the five-to-seven-year-olds there enjoyed the Commodore Pet they already had for doing sums or just pressing the keys.

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NEWS IN BRIEF

UKITO firms in majority

OVER half the UK computer industry, 16 firms, are now members of the United Kingdom Information Technology Organisation, it was announced this week as the controversial lobby group unveiled its official constitution. Donald Cook of ICL affirmed that pressure on government to win support for home-owned industry was getting more important than ever as the GATT code on preferential public purchasing loomed.

UKITO has no formal links with the similar European Informatics Industry Association (CW, April 17), but is happy to have an open dialogue with it, Cook said. UKITO has been criticised as a divisive force in the UK industry, distinguishing as it does between home-owned and foreign-owned firms (CW, March 20).

Xerox UK bureau

XEROX Computer Services of Los Angeles is setting up a UK bureau. It will be based initially at the Rank Xerox factory at Welwyn Garden City, Herts while a permanent centre is being set up at Colindale, North London. Apart from time sharing facilities it will offer consultancy services.

GEC dispute ends

THE dispute at GEC Telecommunications in Coventry ended last week with ASTMS members accepting the company's offer of 17% and an agreement that changes in work patterns would only be introduced after proper consultation.

Tax problems for UK staff at ESA

THE status of UK operators and programmers working on the Continent on a temporary basis could be affected by a dispute over income tax involving 50 operators at the European Space Operations Centre at Darmstadt in West Germany that were hired from London personnel bureau Datasolve Knights.

The West German tax authorities are claiming that income tax has not been paid for several years by many of the UK operators at Darmstadt and the money which is said to be owing is being demanded from Knights itself. However, Knights is insisting that the operators were responsible themselves for paying tax and the result has been a rift between Knights and ESOC which looks like ending in the operators being directly employed and paid by the European Space Agency which runs ESOC.

Knights is understood to be claiming that it never had a formal contract with ESOC because the Knights staff at Darmstadt were employed on a temporary basis. Knights' legal advisers have pointed to case law in West Germany relating to the employment of temporary staff from an agency. Knights has no permanent office in West Germany.

Staff have been supplied to ESOC by Knights since the beginning of 1977 under a three-year contract worth £2.5 million. They have operated a variety of systems including the two ICL 2980s that process the digitised images beamed down to earth by the Meteosat satellite and generate the pictures now becoming a familiar part of weather bulletins on television.

Decision on Inmos soon

THE NEB's review of Inmos is expected to be completed within the next 10 days, when a cabinet committee will have to assess its conclusions and decide "whether this country needs to produce standard large-scale integrated circuits or can rely on the growing number of US companies setting up here".

Dick Petritz, Inmos managing director, remains confident that the company will get its second £25 million tranche, as it has done all it said it would and more. The NEB review party, just back from a successful visit to the Colorado Springs headquarters, have seen enough evidence to back up this point.

A positive decision, however, might have strings attached, and could involve further negotiations, adding to the seven-month delay in the company's plans. A negative decision would also be bad for Inmos: the company would continue operating in Colorado Springs, but at a slower rate, and eventually look to financial backing.

Viewdata access to IBM

VIEWDATA users will be able to access an IBM mainframe in 3270 mode using an office system as a transparent converter. That is the most striking feature of the second model in Redifon's R1800 range of office systems (CW, March 27) which model has now been unveiled as the small-scale R1800/30.

A new software facility called 3270 Viewdata Pass Through is part of the R1800/30's strong emphasis on viewdata, to be used for management information, ordering by sales staff and outside agents, and the like. A standard Prestel set can be used to access the Redifon machine and then call for information which happens to be on a separate IBM system. The mainframe will be called up automatically using standard IBM protocols, and the user will be unaware that this is happening.

Otherwise, the R1800/30 is intended mainly for such work as data entry, particularly using handprint terminals. Four viewdata ports, four handprint ports, and eight VDU ports are available, with up to 20 megabytes of storage. The programming language is similar to Cobol.

Word processing is not being emphasised, although text editing is available.

Technical Change Centre could have beneficial effect on UK research

INNOVATION to boost the UK economy could be made easier and research could be directed in beneficial rather than harmful ways if the Technical Change Centre, just established by the Leverhulme Trust and two research councils, achieves its aims.

So said Sir Michael Swann, chairman of the centre (CW, February 21) announcing its official launch and the start of the hunt for someone to fill the £20,000 post of director.

The original name was the Centre for the Analysis of Technical Change, but this has been modified because of the unfortunate connection of the acronym CATCH with "Catch-22." The Centre will have about 20 professional staff, funding of £500,000 a year, and if all goes well, another £250,000 a year of contract income. A location has not yet been chosen.

Explaining what the Centre could achieve that was not already being done by other bodies, Sir Geoffrey Allen, chairman of the Science Research Council said there needed to be a more even-handed approach to the forecasting and analysis of change. At present this tended to be carried out either by technical people looking at their own work from too close up or social scientists looking at it from too great a distance, with very little feed-through. The SRC hoped to get advice from the Centre on what research to pursue, he said.

Michael Posner of the Social Science Research Council said we needed new ways of getting change accepted. Planning procedures and reviews worked well, he said, but there was a danger that the delays they incurred could get longer and longer, leading to stagnation.

Sir Michael Swann pointed to the attitudes of would-be innovators as one possible area of research. Do the universities hammer innovation out of people? he asked, and do legal restraints and the tax structure also hinder them? What about the attitudes of the work force? Unemployment through new technology, man-machine interfaces, privacy, communications, and biotechnology were other possible areas he mentioned.

The independence provided by the Leverhulme money was very important, Swann added.

Philip Hughes, chairman of Logica, is on the Centre's organising committee, and it is hoped there will be a trade union member as well.

Racal acquisition

RACAL-MILGO Inc has acquired a small Chicago-based company, Telesystems Network Inc, which builds specialist data communication equipment for protocol conversion.

Vydec word processors can be linked together

VYDEC standalone word processors can now be linked together into a shared-resource system with up to 16 terminals and 10 megabytes of central disc store, using the Netword facility announced in the US. This is one of the first steps in Vydec's development of bis, the Integrated Business Information System, which will eventually incorporate electronic mail, facsimile and intelligent copiers.

Netword, which is not yet available in the UK, consists of a [illegible]

group of customers the aims of the company's parent, Exxon Information Systems, in tackling what is expected to be an $85 billion market by 1985. A prototype office system is already under development in New Jersey in which facsimile images can be mixed with text in the same document, and voice annotations can be attached to documents in a similar way to that envisaged by Nexos (CW, January 31).

[illegible]

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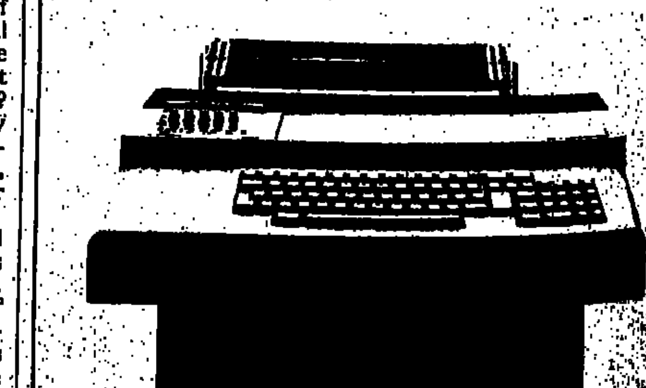

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Free market planned for telecomms in UK

PLANS for making the British Telecom side of the Post Office one of the most liberal telecommunications authorities in the world were announced by Industry Minister Sir Keith Joseph on Monday. Among the proposals:

- Apart from the first telephone, which will continue to be installed and maintained by British Telecom, a completely free market to operate in domestic and business attachments to the network, subject only to technical approval.
- Private companies to be free to offer "value added network services" such as communicating word processing, store and forward voice and data services and electronic mail; such services initially to be only complementary to and not direct competitors for existing British Telecom services.
- The arbitrary British Telecom monopoly of private automatic branch exchanges supporting fewer than 100 extensions to go. British Telecom to retain the right to maintain all PABXs. However some larger ones, like the IBM 3750 are already maintained by the supplier, and continuation of this will be subject to negotiation.
- The proposals to be implemented over a three-year period from this week, to allow the UK industry to develop and begin marketing products already offered by foreign companies, and to prevent the UK market being swamped by imports.
- British Telecom to be required to set up subsidiary companies, either on its own or in partnership with the private sector. Partners could be foreign companies.
- Foreign competition will in general be permitted only from countries which themselves have a liberal attachment policy. The US is regarded as one such, and Holland and West Germany are considering relaxation of their PTT monopolies.

Announcing the plans, Sir Keith paid tribute to the steps towards liberalisation and the general excellence of Post Office telecommunications under Sir William Barlow, and said the necessary legislation for the new regime would be included in the Bill to separate the Post Office into two corporations.

Sir William's response to the announcement was that although British Telecom had argued for retention of the monopoly it was not afraid of the challenge and would compete vigorously in the areas opened up to competition. The other side of the coin, he said, was that it could enter markets previously closed to it, such as for large PABXs, and was no longer obliged to provide services it did not find economic. He had nothing particular in mind in the latter category but it could cover equipment, locations or services.

ESA may take legal action

LEGAL action may be taken against recruitment bureau Datasolve Knights following the withdrawal of its services from the European Space Operations Centre in Darmstadt, West Germany (CW, July 17). The action would be taken by the parent organisation, the European Space Agency.

Knights is understood to have severed its links with Darmstadt because of demands from the West German tax authorities for taxes said to be owed by many of the 50 operators, placed by Knights, who have been running the computers at Darmstadt since early 1977.

A spokeswoman for ESA said that Knights "withdrew its services" from ESOC on July 1 and that there was now "the possibility of legal action against Knights".

Briefing

Datatype buys Abacus

THE South Wales based Datatype group, specialising in terminals and systems, is the new owner of Abacus Computers. The group has taken over a major part of the operations and is revamping it into a new company, Abacus Datatype.

Datatype managing director Gerry Tuffs told Computer Weekly that the existing business would carry on, and customers would continue to receive service.

Pioneer

ONE of the world's pioneers of computing, Professor Maurice Wilkes, is retiring as director of Cambridge University Computer Laboratory. His work spans developments from Edsac to the Cambridge Ring and in an exclusive Computer Weekly interview he tells Malcolm Peltu of some of the highlights of these years. Pages 12/13.

ICL to 'marry' CAFS and IDMS

AN experimental marriage between ICL's CAFS content addressable file store and the IDMS database management system is being implemented within ICL. The experiment, if successful, would carry ICL into the forefront of database technology and assure the future of CAFS as a long-term product.

CAFS consists of software for channelling inquiries, which runs on a mainframe computer; a back-end computer which is designed for fast parallel searching, and up to 14 EDS-60 60 megabyte disc drives. Optionally, up to eight of the disc drives can be modified with nine additional read amplifiers, making it possible to read 10 tracks on each drive simultaneously.

The idea being tried out in ICL's product costing department is to encapsulate formatted data from an IDMS database into CAFS formats. The complete IDMS database is to be stored on the CAFS discs, and a formatting utility has been written for this. Between the IDMS software on the mainframe, a page-write-formatting-subroutine is needed for updating the database, and a page read deformatting subroutine is needed for accesses to the IDMS database.

The idea of marrying the two systems is to provide the user with the fast random search facilities offered by CAFS, and efficient transaction processing and database navigation for teleprocessing and batch applications provided by IDMS.

There will be some trade-offs. IDMS performance will be somewhat degraded by the need to translate into and out of CAFS formats, and the IDMS/CAFS files will take up more disc space than standard CAFS files. However, the project is only in its first phase and already these

● Turn to back page

Announcement today

ICL is due to announce its Co-operating Systems Environment and CSA network architecture today, Thursday. The announcement will emphasise ICL's commitment to the concept of open networking — the interconnection of ICL computers and terminals with those from other manufacturers (CW, October 4).

The ICL network architecture CSA will include full support for packet-switching to the international X25 standard. The approach taken by ICL is expected to be most similar to that of CII-Honeywell Bull in France, with its Distributed Systems Environment and Distributed Systems Architecture, DSA.

Fairbairn is IDPM vice-president

DAVID FAIRBAIRN, director of the National Computing Centre, is to be the Institute of Data Processing Management's new vice-president for 1980/81. Fairbairn has held appointments at EMI Medical, ICL, Dataset and Guinness in North America.

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Memorex $22m in red

MEMOREX has reported a net loss of nearly $22 million for the second quarter of 1980, wiping out its small profit in the first quarter and underlining the financial problems that have forced the company to make redundancies.

In the UK Memorex has cut back staff in the audio and video sectors. [illegible]

Memorex UK, Mike Kitching said: "We are still addressing the same market." [illegible]

Texas to build 5¼in hard disc

WITH a line-up of manufacturers already threatening the 8-inch floppy disc drive market [illegible]

[illegible] microcomputer systems and has bought the rights to build the drive, the ST506, from Shugart Technology of Scotts Valley, California, a firm set up by Alan Shugart, the founder of Shugart Associates. [illegible]

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COMPUTERVIEW

A policy for Eurochips

THE Berlaymont Building in Brussels is a monument to the triumph of hope over experience. Therein sit the incurably optimistic members of the EEC Commission, dreaming up endless schemes for the enhancement of the Community's place in the world, apparently unchastened by the fact that their splendid notions are almost invariably shot down by the Council of Ministers, or at best crippled by parsimonious budget slashing.

Last week and this we have reported the Commission's proposals for an EEC plan for microelectronics and for telecommunications. Eminently sensible and reasonable they are, too. The microelectronics plan is to be welcomed for its clear-sighted recognition that Europe has to take a great technological leap if it is to catch up with the Japanese and the Americans in microelectronics.

Instead of proposing investment of public funds in the manufacture of 64K or even 256K RAMs, it says "Let us create the infrastructure which will enable us to make from our own resources and with our own technology, LSI circuits which will be competitive with those being made in the US and Japan, in 1985."

The sum being requested is modest, given the scale of the problem; the Commission took as its model the US Department of Defence programme which was approved at the end of last year, runs for six years and allocates $210 million to the development of ultra-high speed integrated circuits.

However, money is by no means the only prerequisite for a successful policy. The Commission points out that between 1974 and now, the combined investment of the UK, France, Germany and Italy in national microelectronics support amounts to 360 million units of account, £220 million. The net result is that 65 per cent of integrated circuits used in Europe are imported, despite a general tariff barrier of 17 per cent, while some types of circuit have to be allowed in duty-free because they are not obtainable in Europe.

By contrast, the Japanese programme set up in 1976, and involving 180 million units of account, £110 million, over four years, was enough to enable Japan to catch up with America, and to win 40 per cent of the world market for widely used chips.

Clearly the Japanese are better at getting value for money than we are, and the reason is not hard to find. In spite of the fact that the big five Japanese manufacturers — NEC, Hitachi, Fujitsu, Toshiba and Mitsubishi — fight each other like Kilkenny cats in the commercial marketplace, the omnipotent Japanese Ministry of International Trade and Industry was able to p[ersuade] them to come together to pool their research [and] development effort over the four-year p[eriod and] thereafter to take the results back to their o[wn com]panies and apply them.

By contrast, if one takes a European view, [govern]ment money in the UK, France, Germany and It[aly has] been squandered as companies in each country [were] backed to duplicate research and re-invent the [wheel].

If we are to succeed, says the Commission, th[is must] end. It is realistic enough to recognise that the F[rench] government is not going to fund Siemens or G[EC to] develop a gallium arsenide semiconductor tech[nology]. But at least, let us have a co-ordination of national [plans] so that at their end we have several of the techno[logies] and products we are going to need, instead of less [than] adequate implementations of one or two techno[logies] quintuplicated all over Europe.

The Commission is seeking up to £30 million a year [for] four years from EEC funds to match an equi[valent] investment from national governments.

Its proposals for Europe-wide procurem[ent of] telephone equipment, and for a Euroterminal whic[h would] be usable with all public data networks exi[sting or] planned in Europe, are equally desirable.

The plans look sensible and thoroughly worth[while] even if they were not set against the absurdities of [butter] mountains and wine lakes. We can only urge the C[ouncil] to adopt them at the first opportunity.

LETTERS to the EDITOR

Standards for open systems interconnection

TOO few people in the UK are helping to develop standards for open systems interconnection and consequently the UK is finding it increasingly difficult to contribute at the international level.

An open computer system allows any computer program, terminal or end-user to communicate with any other on the system, and be understood. Most users welcome the freedom that an open system will give, the most important benefit being that it allows information to be exchanged between different machines made by different manufacturers and under the control of different organisations. However, standards must first be agreed among the suppliers of hardware and software, but will these standards really benefit the end-user if he is not involved in their specification?

The British Standards Institution committee on open systems interconnection, DPS/20, believes that as wide a selection of interests as possible should be involved.

To this end, I am appealing through the columns of Computer Weekly for people who would be willing to contribute to the work in the following areas: the specification of the structure for a communications architecture; the design of protocols to manage functions concerned with remote system start-up, termination, data integrity, authentication and security; the development of a network-independent transport service; the specification of a virtual terminal service to insulate programs from the characteristics of real terminals; the study of a standard service for file transfer, access and management.

Computer users who are interested and feel they may be able to contribute to the work are invited to contact me for further information.

KIRK GEE
Chairman of Working Group 6 of BSI/DPS/20
National Computing Centre,
Oxford Road, Manchester M1 7ED.

Relational database barriers must go

I CERTAINLY agree with R. P. Worden's comments on relational DBMS (CW, June 26). Relational systems have been around for several years (see Relational database concepts, by C. J. Date, Datamation, April 1976) and at least one has been commercially available since 1975, i.e. Nomad from National CSS.

We have implemented relational concepts in Nomad including both relational algebra and relational calculus but since it is primarily an operational applications development system, and intended for non-DP specialists as well as the DP man, the terminology we use is different from that used in more theoretical implementations. There is nothing magical or mystical about relational systems; already many companies are using them extensively to solve their day-to-day operational problems and to support their decision-making processes.

The sooner these academic and theoretical barriers to relational databases are pushed aside the better it will be for the person that really matters — the end-user.

J. W. SHARKEY
European product marketing manager
CSS International (UK),
London SW1.

Two-year wait for a programmer

I HAVE just read Page Six (CW, June 26), and although I'm sure KBS do a fine job, I should like to state my own case to show how difficult it can still be for a would-be applicant.

I have well over five years' operating behind me, more recently in the contract field, but would like to find a way into programming.

On inquiring at the employment bureau which deals with TOPS courses I was told . . . "There's a two year waiting-list." As short and sweet as that.

With this kind of governmental reaction it's no wonder Britain is beginning to fall ... European computer "league" mentioned in Computerview in the same CW issue.

M. E. BOTT
Grove Park,
Liverpool 8.

THE EDITOR welcomes letters commenting on subjects published in Computer Weekly or on original topics. All letters must be accompanied by the writer's name and address, not necessarily for publication.

Well done

I HAVE been reading with interest the series on Advanced File design, especially Part 14 (CW, July 17). We have had a large database system operating for some years, and the problems outlined in the articles and their suggested solutions have all occurred to us. The articles read like a list of our programs.

Congratulations on a series which is not only theoretical but also practical.

A. V. F. BRANNAN
Director
Brannan Thermometers,
Cleator Moor, Cumbria

1984 and all that . . .

THIS week's example of the strange things people say in the media about computers was sent in by Mike Eaton of the NCC, who wins £5.

A smaller version of Sharp's portable computer system is being planned for the US in direct competition to the programmable calculator market. However, this will only happen when a printer attachment is available and that is not expected until the end of the year. The US version is expected to be the size of a pocket electric typewriter. — *Computer Weekly*

GOVERNMENT COMPUTER REQUIREMENTS

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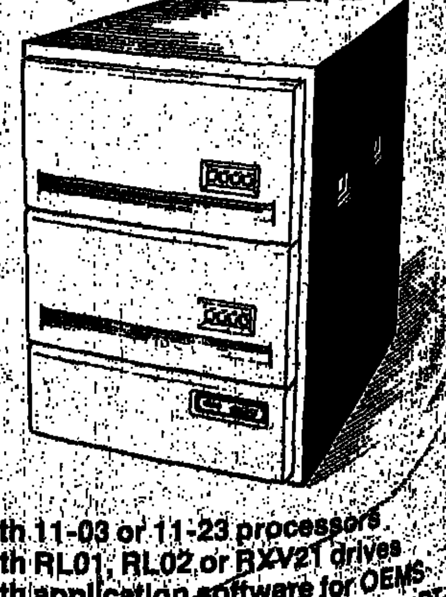
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OVERPRICED COMPUTERS? INADEQUATE PERSONAL MICROS?
WHY NOT FIND OUT MORE?

Recession blamed for Redifon lay-offs

REDIFON Computers has made 70 manufacturing and administrative staff redundant at its Crawley and Peacehaven, Sussex, factories because sales in the UK are not as high as the company expected. Redifon said it had been necessary to revise its business plan "to match resources to demand" and blamed what it considered to be a recession in the UK market.

Redifon said that demand overseas for its systems was not growing fast enough to use all of its UK labour capacity.

Redifon also cited new technology employed in its latest products, particularly the R1800 office system (CW, July 17). The company says this technology made its manufacturing less labour-intensive, so that the redundancies would increase productivity and reduce product costs.

Jobs would be found for some of the redundant staff within the two other firms in the Redifon group, Redifon Simulation and Redifon Telecommunications.

Redifon's announcement follows closely on NCR's admission that it had axed 40 jobs in its commercial and industrial marketing division (CW, July 17).

However, Redifon is still expanding its product line with the announcement of the R1800/30 two weeks ago and the news from managing director Mike Aldrich that a fully-fledged shared-logic word processing system is on its way. Aldrich describes the company's aim as "second generation word processing", in which there will be more integration between WP and DP, and in which text can be manipulated in elaborate new ways. A new word processing terminal is being developed.

Integration of voice into the office system, which other companies such as Nexos and Datapoint are working on, will come later, Aldrich says.

The processor in the 1800/30 is the smallest of three in Redifon's new R4000 range of 16-bit minicomputers. It cycles at 1,200 nanoseconds and currently supports up to 96K-bytes of memory. The next processor up cycles at 800 nanoseconds, and the top model at 400 nanoseconds.

The smaller two are built in TTL-LSI logic and the top model uses bit-slice microprocessors. The instruction set is an extension of that in the R3000 minicomputer, itself developed from the DDC 116 mini, which was copied from the Data General Nova.

All the existing Redifon software apart from that for the R2000 mini used in the large Keycheck key-to-disc systems runs on the R4000 line.

Norway air traffic control system

A NATIONWIDE air traffic control support network is being implemented in Norway under a 23.6 million Kroner, £2 million, contract with Siemens.

The network, to carry air traffic movement, meteorological and administrative data, will be built around a central database in Bergen, and Norsk Data is supplying two Nord 100 minicomputers to run the database, plus 44 further Nord 100s, one at each Norwegian airfield.

Norsk Data's share of the contract is worth 6.2 million Kroner, £550,000. The database configuration will consist of one live and one standby mini, linked to the network via a dual Siemens EDX-M data switching system. The terminal control unit at each airfield will consist of the mini plus up to 16 terminals. These will comprise a Tandberg display and a low noise Siemens PT80 printer.

Interconnection will be at 2400 bps over the planned Norwegian public data network, Nopon, which will initially be circuit switched, but will later add X25 packet switching.

Price cuts of 25% on ICL 1500 series

IN what looks like a grand clearance sale in anticipation of the successor product, ICL has consolidated the five model groups and 33 configurations of the 1500 terminal system into two models and five variants. The two are the original small screen 1501 and the latest version, the 1505, announced two years ago (CW, October 19, 1978).

Best news for users is that cutting out all the other models has slashed ICL's manufacturing costs and the benefit is being passed on with price cuts averaging 25 per cent. A 1501 desk-top unit with 4K-words of memory now costs just over £2,500, and a system with 10 megabytes on disc, which can be used both stand-alone and as a terminal system, costs under £9,000. A new 10 megabyte drive, half fixed and half exchangeable is offered, and maximum disc backing is now 20 megabytes. Main memory maximum is now 16K-words.

Japanese challenge

CRAY Research and Control Data could soon face a serious threat to their supercomputer sales from the two Japanese computer giants, Hitachi and Fujitsu. Both Japanese firms have supercomputers under development, with Hitachi expected to make an announcement by the end of this year and Fujitsu some time next year.

The two Japanese firms have been encouraged to bring out supercomputers by the substantial potential business in Japan as well as in the rest of the world. Cray already has two of its Cray-1 machines installed in Japan.

Control Data said last year that it saw a potential worldwide market for 200 supercomputers like the Cray-1 and its own machines. Control Data's Cyber 203, announced about 18 months ago, was superseded earlier this year by the Cyber 205 which employs high-density emitter coupled logic.

British Telecom in trouble with unions

THE Society of Civil and Public Servants, the union which represents British Telecom's programmers, is to make a formal complaint to British Telecom this week because it has not been consulted or informed about staffing plans for proposed new software centres in Belfast and Newcastle-upon-Tyne.

British Telecom plans to staff the centres with engineers and has held talks with the Society of Post Office Executives, which represents senior engineering staff.

Frank Johnston of SCPS's Belfast branch said he had the impression that graduate level programmers rather than engineers were being sought and his union wanted assurances that British Telecom was not tampering with its members' futures.

● A hostile reaction to British Telecom's invitation to foreign companies to tender for the supply of small PABXs has come from the electricians' union, the EETPU. Roy Sanderson, the national officer for engineering, said it would be farcical if UK manufacturers lost orders for PABXs because designing them to British Telecom's demanding specifications made them more expensive than foreign products which were excused from meeting these specifications. Doing it at a time of growing unemployment was a grotesque form of industrial and social irresponsibility, he said.

US news net extended

NEWS from major newspapers throughout the US is to be accessible online as an extension of the experiment started recently with a local paper in Columbus, Ohio (CW, June 19). Catalysed by the Associated Press, an 18-month experiment has been started whereby newspapers feed news direct from their computer typesetting systems to the Compuserve bureau in Columbus, from which it will be accessible to anyone with a dial-up terminal.

Among the papers that will become involved over the coming months are the New York Times, the Washington Post, the Chicago Sun-Times, and the San Francisco Chronicle. Compuserve has a nationwide network that can be used by anyone with a terminal or a home computer with communications facilities.

On connection a user will be offered his local paper's information, but he can ask to see "out of town" papers as well. The news will be fed to the computer both from the newspaper and direct from AP, the latter especially in the case of late sports results and the like.

VDU blow-ups

LARGE screen projections from VDUs can be produced by the Databeam system introduced by a new company, Brooks Multibeam Communications Systems of Poole, Dorset, part of the Brocks Group of companies.

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GOVERNMENT COMPUTER REQUIREMENTS

MINISTRY OF DEFENCE
ROYAL SIGNALS AND RADAR ESTABLISHMENT
MALVERN — Ref. No. (CP 15/65/CW)

A computer system is required to be installed at Malvern to record and disseminate information about electronic components with terminals at Portsmouth, Portland and London. It is intended that certain commercial firms should be allowed to interrogate data held in the system by connection to it over GPO lines. The provision is required of both system software and hardware. Installation is required about March, 1981.

Applications for copies of the Operational Requirement should be sent to the CENTRAL COMPUTER AND TELECOMMUNICATIONS AGENCY ..., NORWICH NR3 1DW, quoting the appropriate Reference No. shown above. Completed proposals should be received not later than 29 August, 1980.

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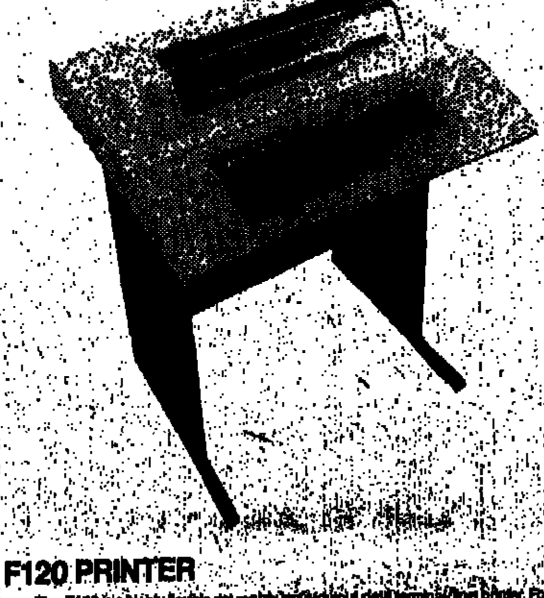

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Downtime

by Chad

Exit, pursued by a theory

THE pull-the-wings-off-the-butterfly people have been at it again, with all this trying to prove by computer that Shakespeare was the author of a hitherto anonymous (and incidentally second rate) play. After the ballyhoo over the authorship of "The Booke of Sir Thomas More" had died down we were left with established scholars accusing the proponents of the new theory of being sloppy and jumping the gun, while the newcomers in turn complained that they were excluded from publication by vested interests.

I have this awful feeling of having been here before. Years ago a friend of mine tried to turn me on to a book that proved beyond a shadow of a doubt that Shakespeare was all written by Christopher Marlowe. It did this by measuring the average length of words in various plays to 93 decimal places, and comparing them. My friend was most scornful when I remained unconvinced — I must be some ignorant savage still to disbelieve after Unerring Science has spoken.

(The theory did, by the way, allow for the fact that Marlowe died half way through Shakespeare's career. Marlowe's murder was supposed to have been faked to allow him to escape from some enemies. What wasn't allowed for was the fact that if you read the plays instead of counting the blasted letters you realise that Marlowe and Shakespeare were totally different people.)

Anyway the Marlowe theory is now discredited, I am told, because the mathematics was unsound in some way or other. But if that is the case, how can simple souls such as you or I be sure that there isn't a similar error in the latest pronouncements? I am as sceptical as was Disraeli about "lies, damned lies, and statistics", and I get very worried about these people who say, "The significance level of my figures proves the following is true about the world . . . ." This gets very dodgy over such contentious issues as the efficacy of comprehensive schools.

The present theory is based on the work of the Rev Andrew Morton, who has explained his ideas in detail in an article in Computer Weekly (CW, August 9, 1979). The analysis uses the "word habits" of writers, that is, how often they use certain combinations of words and certain other words to start sentences. Morton is used to being regarded as a crank by traditional academics, but he gets very browned off at those who say, "If you can show your method works with (say) Dickens, I'll believe you." Morton then shows it does work, and lo and behold the academics find another reason not to accept it.

It was Thomas Merriam, an historian at Basingstoke Technical College, who did the work on "Sir Thomas More". He agrees that some of his samples may be too small, but insists that he still gets plenty of reliable results. In the meantime he is having difficulty getting his work published so that people can judge it on its merits.

Stanley Wells of the Oxford University Press points out other difficulties, such as the fact that the manuscript of Sir Thomas More is in six different hands, several of whom appear to be thinking the stuff up as they go along — for instance, there are crossings out and so forth. Yet Merriam says it was all written by one person.

Also, how can you analyse the first words of sentences when Shakespeare never wrote any punctuation? The full stops were put in by the printers.

Wells concludes by saying, "Lots of literary scholars are suspicious of computers." Now *that* can't be a bad thing.

MICHIE'S PRIVATEVIEW

Don't bank on knowing how to define knowledge . . .

Professor Donald Michie is head of the Machine Intelligence Research Unit at Edinburgh University.

COMPUTER people engaged in barking up the tree of knowledge will have been more than a little dumbfounded by the view taken of computer-stored information by three Appeal judges in the case of the Crown *versus* Pettigrew, accused of stealing banknotes. Three fivers in his possession had serial numbers matching a list printed out by the Bank of England computer. To be admissible, according to the 1965 Criminal Evidence Act, a document must be prepared by someone with knowledge of its contents. A computer cannot be regarded, so the Appeal Court ruled, as having "knowledge" in this sense.

Something, either in the state of the law or in received notions of what constitutes knowledge, must be very seriously wrong. Yet Examining Boards down the ages have made no bones about knowledge. If the candidate can correctly retrieve the requested information, then he is credited with knowledge of it, and hence with knowledge of the contents of any document he prepares in his attempt to satisfy the examiners. Why the Bank of England computer's print-out should be flunked in the analogous case seems mysterious.

Doubtless the computer itself generated in the first place the numbers which it subsequently knew, or did not know. But in the examination room this is never a disqualifier.

I recall Practical Electricity in my Physics Prelims. I had concluded by prior study of statistical distributions that the chance of having an electricity experiment was small. In horror I saw the words, "Use the apparatus provided to verify Ohm's Law." What Law? And how on earth was this contraption to be wired up, let alone used?

First hurdle: announce that the apparatus supplied is unusable. In relative terms and taking all things into account it certainly was. The invigilator finally sorted it out, taking and recording in the process a great number of trial readings. So the second hurdle was a gift. Ohm's Law shone from the jottings so seductively that only an unfeeling dolt could have failed to note, and duly verify, the beauteous regularity.

I thus received a satisfactory mark for my knowledge of Practical Electricity. So what is all this nonsense about the Bank of England's machine, even if a little computer creativity may have been involved somewhere along the line?

Before any reader chokes on the word "creativity", let me at once affirm that *information* cannot be created in the course of a computation although, alas, it can only too easily be destroyed! Does this mean that a computer cannot, through purely internal operations, add to its *knowledge*? If we continue to guide our definitions by Examining Board practice, it means nothing of the kind. It is the capacity to give correct answers to questions: clear enough, one would think.

Clear enough with computers. For human knowledge-sources the matter can get tangled. The outraged husband, finding a nude man in his wife's bedroom wardrobe, barks at the intruder: "What the hell are you doing there?" "Everyone", comes the reply, "has go to be somewhere." Does this rate 10 out of 10, or 0 out of 10? Certainly any intermediate mark would seem to be wrong.

But how can a computer add to its knowledge without adding to its information? Suppose I load a prime factorisation program which, for integers up to a million, answers "Yes" or "No" according as the number concerned is composite or prime. I try it with 997 and after a while (this is a slow home computer) I get "No." So its "knowledge" extends at least to 997. What else does it know?

After input of 999,997 I get bored and go out, leaving it running. No marks out of ten. My program habitually enters its computed results into a look-up table before exit. So I am not amazed on my return when it now appears to know the answer to 999,997 — replying instantly "Yes" by lookup. Moreover it turns out also to know that 999,991 is composite, having failed hopelessly on an earlier trial. The seeming miracle is traced to its use, for speeding up the computation, of the new-found prime-ness of 997.

On any reasonable definition, knowledge is here being created and used. Yet information remains constant, being fully contained in the original program. What, then, changes? Simply the size of that fraction of the total information which can be mobilised fast enough to satisfy the examiners.

With all respect to Mr Pettigrew and to the Crown, the Lords of Appeal may have a long row to hoe.

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FOCUS on filling those DP vacancies

THE shortage of computer personnel is an established fact of DP life, and now a collection of polls, surveys and reports all agree that there is a serious shortage of DP manpower and that the recruitment problem appears to be escalating.

There is a current shortage of 16,000 analysts and programmers and 6,000 electronic engineers (CW, June 7), and vacancies for programmers are said to be increasing at a healthy rate of 500 per month.

So far, so good — at least for the DP professional and probably the advertisement managers of the computing Press. But while the recruitment marketplace is flourishing, the news is not so good for DP management, who have to cope with ever-increasing workloads, fresh applications and lower budgets. In such circumstances, competing for scarce talent has become a challenge.

For the company, the problem is one of retraining experienced personnel in the face of aggressive blandishments offered by the competition. For the recruiting company, the problem is that of compiling attractive and enticing job adverts and disregarding whatever might appear to be the current pay scales. For the individual, the challenge is the ability to strip away the glamour for the job advert in an effort to discover the practical requirements of the position.

To the DP professional, it is only of fringe benefit interest to know that the recruiting company is situated in the new Covent Garden piazza in close proximity to Peppermint Park and a keep-fit gymnasium. What the individual would prefer is data on the rate of staff turnover, the amount of care and attention required for existing programs and routines and the mix of computing technologies and equipment being utilised.

In the meantime, the service industry is busy taking advantage of the installation misfortunes. DPMs are having to contract out their systems requirements if they are to meet time and budget factors. This pressure is in fact growing, as users insist more and more that their jobs are completed on schedule.

Often these new applications involve advanced level technologies which in many cases can only be handled by specialist system houses. In such cases, the cost could well be less sensitive a matter than that involving confidence of delivery.

By tradition, much of the computer industry operates a recruitment-by-poaching policy. Basic training is limited to input personnel; otherwise it is a matter of cheque book-type transfers where, unlike football, only the individual concerned and not his company benefits.

Apart from such organisations as the clearing banks and government installations, which have adequate funds and resources available for prime training, most companies which wish to avoid joining the recruitment merry-go-round have to rely on an intake of graduates from universities and colleges. State schemes such as TOPS and Threshold can only make a limited contribution to the supply of pre-trained recruits, as can the various computer training schools.

At a time when the computer industry is one of the few expanding areas of recruitment in the UK, the industry should be setting about offering job opportunities to unemployed school leavers — particularly those from the more depressed areas of the country. Providing the necessary training will need some immediate constructive action by such responsible bodies as the British Computer Society and the NCC. With both unemployment and DP job vacancies soaring, a merge and sort program is an urgent requirement.

TEN YEARS AGO

From Computer Weekly of July 23, 1970

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MANAGEMENT CONTROL SYSTEMS

£300 award to essay winner

JOHN FINNIE (right) of Solihull, who worked for GKN Group Management Services, has won this year's IDPM/Langton essay competition on the practical implications of office automation. He is seen here receiving his prize of a silver tray and £300 from Geoff Dale, head of British Telecom's telematics division.

Second prize went to Frank Boeuf of Abbots Langley, Herts, while David Reed of Barnet, Herts, a consultant with CAP-CPP, won third prize.

The judges were Geoff Dale; Roy Close, director-general of the British Institute of Management; Dr Doug Eyeions, director-general of the Computing Services Association; Bill Herndon, vice-president of operations at Citibank; Brian Manley, managing director of Philips Business Systems; Barrie Sherman, director of research at ASTMS; and consultant Eric Watson, who was last year's winner.

IDPM subscription up 17 per cent

AT a confusing annual meeting of the Institute of Data Processing Management in London last week, an increase in subscriptions of about 17% was approved on the nod. There were about 80 members present who raised many points on the finances of the Institute during the meeting.

Ex-BCS president Gerry Fisher called for conferences and seminars, which lost about £1,000 last year, to break even in future and to be costed on the basis of a minimum attendance.

He also suggested that it was wrong for the Institute to budget for a profit on examinations and advocated that these should be run on a subsidy to encourage people to become professional members.

Alan Simpson, a former Institute press officer, commented on the cost of nearly £7,000 for the year book and asked why, with all the adverts in it, it had not made a profit.

Secretary-general Ted Cluff said if the members wanted a year book and magazine of the present quality it involved high costs and postage.

A proposed change of rules, drawn up by the Institute's solicitor aimed to allow postal ballots for vacancies on the council. This was agreed, but members were concerned that this could lead to one branch dominating the council. There was a call for the single transferrable vote to be used and for the election to be supervised by the Electoral Reform Society.

Cluff said he would put a proposal for this method of voting before the 1981 annual meeting. He added that he hoped to be able to have full copies of the Institute's rules ready after that meeting.

First woman on council

FIRST woman member of the executive council of the IDPM was elected at the annual meeting. She is Elizabeth Payne, 29, who is an analyst/programmer at Sheerness Steel in Kent. She has been in DP for five years, has a law degree, and says she hopes to bring "youthful vigour" to the council.

One third of the council seats were up for election and the other four elected were Roy Hill of ICL, Philip Maylor of De Havilland College, Colin Smith who is a DP manager and consultant, and Vic Thorogood who has over 30 years' experience of data processing.

Due to a constitutional quirk, secretary-general Ted Cluff had to stand again and was elected unopposed. The council will be recommending rule changes to regularise Cluff's full-time position.

Dutch group seeks to pool 4300 experience

ALTHOUGH billed as being dramatically easier to use than its predecessors, the IBM 4300 series has had many users foxed, and tales of problems with some of the new software abound.

A Dutch group is seeking to pool user experience in the implementation of 4300 systems and would like to fly over UK users to give presentations.

The forum is an offshoot of the user group of a Dutch software house, Share Netherland BV of Amsterdam, which specialises on IBM systems and is part-owned by its biggest customers.

The forum was established as part of the user group activity of these major customers, and currently has 85 4300 users and prospective users.

These are held every two months and so far have heard presentations from 10 4300 users. The minutes of the meetings are distributed free, but are in Dutch, although presentations in English will be welcomed.

Interest in 4300 has proved so intense that the group has split into two units, one conducting workshops for experienced 4300 users and the other aimed at companies wanting to learn from the experience of others.

As far as UK users are concerned, the group is primarily interested in broadening the range of experience from which it can learn, but UK companies would be welcome to join; membership is free.

There is no marketing activity at the meetings, either from IBM or independents, and the forum is run by the members. It has been welcomed by Guide, the worldwide IBM user group as being complementary to Guide's activities. Despite the name, Share Netherland has no connection with the other IBM user group, Share.

People wanting more information about the group, prepared to give presentations or wanting to receive the Dutch minutes should contact Robert Voges, Share Netherland BV (CW), P. C. Hofftstraat 23, 1071 BL, Amsterdam. Tel: (from UK) 01031-20-796011. Telex, 18633 SHARE.

More linked to police system

MANY police stations are now linked to the police national computer via the police private telex network using Ascii to telex code converters from Midlectron of Belper, Derby.

The order placed by the Central Computer and Telecommunications Agency on behalf of the Home Office includes 140 paper tape punches and printers.

IBM rivals 'unperturbed' by launch of Displaywriter

IBM's competitors in word processing have been largely unperturbed by the company's long-awaited announcement of the Displaywriter, a stand alone word processor with a full size screen (CW, June 26). The apparently low price of $10,070 for a standard configuration is pointed out as entailing considerably more expense for software, training and support.

Some assistance is provided for users when the machine is purchased, but after that the services of a marketing support representative cost $56 an hour.

This unbundling is the start of a trend likely to be followed by other manufacturers. Pat de Cavaignac, president of Vydec, commented: "We can't continue to offer consulting services free of charge."

Reaction to the product as a whole has been cool. A US spokesman from Wang said: "We were very underwhelmed at the pricing of the new product. IBM's Office Products Devision had a morale problem because they had nothing to sell against the machines sold by Lanier (AES) and CPT.

"The IBM product will not affect our pricing or our marketing strategy, and with all those salesmen going out selling word processing, it is likely to increase our business rather than diminish it."

Harry Mallinson of AES Wordplex in the UK commented: "Four years after the advent of stand alone processors, IBM has produced a machine that works." He also thought that IBM's marketing efforts would generate more business for everybody.

IBM is emphatic that the Displaywriter is not intended to replace the small-screen Office System 6, pointing out that the System 6 has functions such as records processing and file merge that are not available on the new machine.

The Displaywriter uses an Intel 8086 16-bit processor chip, as does the forthcoming Nexos 2200 (CW, July 10) and the 25-line screen is made by Panasonic. The two models of daisy wheel printer offered are both of IBM design and manufacture, instead of the Qume unit IBM has been selling.

Observers feel the Displaywriter's features are not particularly impressive. US consultant Sanford Garrett said: "In terms of software and capabilities, Xerox and Wang systems have more flexibility, and have better search, scroll and sort capabilities."

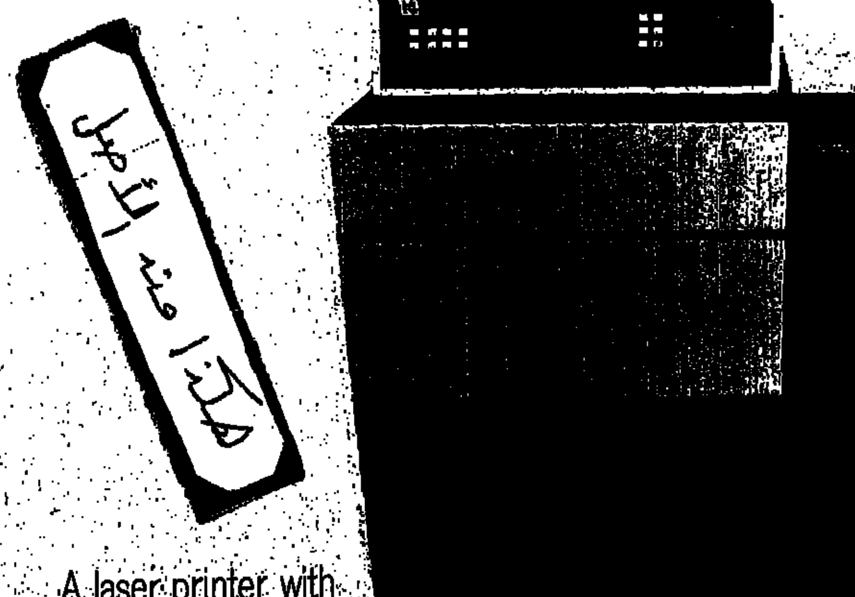
IBM asserts that the lack of free training is not simply a component of the low price of the hardware. "Ease of use has made this training policy possible," said Ron Eich, office products director of product development.

Direct booking

COACH tours with the National Bus Company can now be booked directly into the Digital Equipment PDP-11/70 based reservations system from terminals in five regional offices of the company's travel agent subsidiary National Holidays.

The communications links use 11 statistical and time division multiplexers supplied by IAL, the communications subsidiary of British Airways.

From Kodak a laser printer.



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CW

PAGE SIX for programmers and analysts

Here's some ammunition to fire back at 'poor productivity' critics

SENSITIVE programmers must find themselves on the brink of paranoia as more and more people stand up at conferences and belabour them for their poor productivity. Everything is smaller, faster, better — annual growth rates of 15% to 30% abound in the industry. Everyone is pulling their weight except the poor benighted programmer, whose productivity it is claimed has risen a mere 3% a year over the past 25 years.

Well, it seems you have an ally at last.

Managers are scarcely able to agree what the product of your labours are, let alone agree on a common way of measuring productivity. That is the view of Thore Thoresen, of the New York consultancy Applied Computer Techniques.

Speaking at the Online Future Systems Forum in London, Thoresen chose to define the product as source code, object code, JCL procedure and documentation.

"But there are no standards by which to quantify productivity. By convention, the size of a program is measured in number of lines of source code. The punched card is dead, but its ghost will linger on for many years yet. Again, sometimes numbers of lines of code and numbers of statements are interchangeable, sometimes they are not.

"Other people, though, say that object code is a better measure, and they count it in bytes. But the amount of object code produced is a function of a number of variables such as the quality of the compiler and the individual quirks of the programmer.

"So we have a number of ways of measuring the size of a program. What about cost?

"We tend to use man-months as a measure of cost. But other factors such as computer time contribute to costs and are variable. And when you choose to measure productivity in number of lines of code per man-month there is disagreement as to what constitutes a line. Some organisations count the blank lines put in for elegance, others do not. Some count macros as lines, others wait for the macro to be expanded before counting. Man-month accounting practices vary from organisation to organisation.

"So, by default, the industry has arrived at a measure of productivity which involves dividing one very fuzzy unit of measurement by another. The result is very unreliable indeed," declared Thoresen.

"The best it can do is to give a measure of trends in productivity in a single organisation which has used the same standard of measurement over several years.

"An enormous number of other factors influence productivity: the larger the program, the lower the productivity is likely to be. The more people put on to different parts of the program, the more the productivity lost in the overhead of people interactions. Program complexity, choice of access method used affect productivity. There can be an order of magnitude difference between the effort needed for a batch program and an interactive one.

"The performance constraints on the system — fast response times requiring shorter path lengths, the resource constraints, the reliability constraints, all affect productivity.

"Then there is the proficiency of the individual programmer, affected by intellect, motivation, experience. Are there any development tools available? Are they any good?"

Thoresen's next point will strike a chord with most programmers and probably applies to most readers of Page Six.

"Programming is an intellectual task requiring enormous concentration. Yet 95% of applications programmers work in places which were never designed for programming, where the white noise, the discrete noise levels are far too high."

So next time you hear somebody moaning about low programmer productivity, be ready to come back with a few of the challenging arguments of Thore Thoresen.

'Our best hope lies in Ada'

THORE THORESEN presented the forum with a charming review of the progress of programming through the ages before outlining some of the methods which have been adopted to create some order out of the chaos of program development.

"In the early days, before 1960, there was very little commercial programming, and the programmer worked at the machine code level, picking up zeros and ones with tweezers and putting them into holes,

"Then came high level languages. It was marvellous. Suddenly anyone could be a programmer — defrocked ministers, frustrated housewives. Programming became a sort of folk art.

"But by 1965, corporations became very disenchanted. Nobody knew what software was. It was intangible stuff. They ended up defining it as that which is never delivered on time, is never delivered at the promised cost, and never works when delivered.

"Around about 1970, software engineering appeared on the scene to solve all the problems. It sounded great; the name implied a unified discipline, but in reality it was a collection of disjointed techniques, each attacking one aspect of the development process.

"In the beginning, large projects were built in the same way that the Wright Brothers built their aeroplanes. You built the system, pushed it over a cliff, watched it crash and then went back to the drawing board. The top-down development approach which allowed the project to be broken down into pieces that could be tested as you went, appalled engineers who didn't believe in starting a building with the ceiling. But in fact it is a reasonable approach.

"Then there is the structured walk-through, where the programmer presents his program to his peers, who proceed to tear it to pieces — and that approach can reduce the errors and discrepancies before it goes for testing.

"The chief programmer team approach recognises that in the development process, only a small part is coding, while a lot of it is administration.

"It is an attempt to mimic the surgical team, where one guy is in charge of putting the patient to sleep, another wields the scalpel and there are a whole lot of nurses around to clear up the mess afterwards. It can be contrasted with the 200 programmer approach, where 200 programmers are thrown at the project and left to get on with it, which has been described as the hog butchering approach to development."

Nor was Thoresen very optimistic about the future.

"Tools like structured programming can ease the problems, but they are often put in place without taking into account the human factor. Computer programmers are individualistic as a breed, and that goes against the disciplined principles of software engineering.

"We have to look at new methods of acquiring software — packages, automatic program generators do exist, but they only fit some applications."

As for non-procedural languages, Thoresen was very dismissive. "JCL is non-procedural and it's atrocious!" he declared.

As for natural languages, they were too ambiguous.

"You wouldn't gain much if you replaced Cobol with English: who the hell can write English?" he asked.

The best hope he saw lay in the new Ada language.

"Ada integrates program specification and program implementation into the same language framework, so that you can compile the specification and the body of an Ada module separately and thus compile a complete specification tree and verify the design before you write a single line of code to implement the functions of the modules. The replacement of one body with another requires no reprogramming or recompilation of any other part of the program. And the Ada compiler is intimately associated with a database of information describing the modules already compiled, thus automating the management of modular program design."

Despite its apparent attractions, Thoresen doubts that Ada will replace Cobol as the dominant business language in the 1980s, but it could affect the future development of Cobol. Ada will be the primary programming language on Intel's forthcoming IAPX 432 32-bit microprocessor (CW, July 10).

Puzzler

	2	6
1	3	5
4	8	7

IN this miniature version of the 15 Puzzle, the problem is to get the numbered blocks into a circular sequential mode in only 16 moves, with the figures running in correct 1 to 8 order clockwise around a blank central square.

A "move" must consist of sliding one block into whichever square happens to be vacant at the time. Lifting a block out of the frame before replacing it is not allowed.

See page 37 for solution.

Programmers even more in demand in 80s

ALL the signs are that, far from being deskilled or made redundant by development in the micro field and by easy-to-use software, programmers will be even more in demand in the 1980s than they were in the 1970s.

Support for this viewpoint came from another ACT speaker at last week's forum, Bob Fertig.

"The cost of processing is declining 20% a year, the cost of memory is going down 30% a year and the cost of data storage is going down 40% a year," said Fertig.

"Every time the cost goes down, it stimulates demand for more applications. And the lifetime of applications is shortening as the rate of change in big companies increases. Yet the complexities of scale are increasing so that we are reaching the point where, by the time a new application is running, its usefulness has expired.

"Yet people costs are going up 8 to 9% a year in the US, there is already a serious shortage of skilled people, and there is a 30:1 ratio between the skills of the best and the worst programmers and analysts. People spend 60% of their time in maintaining, enhancing and supporting old software, and that is increasing.

"All this means that the programmer productivity, which has increased only one and a half orders of magnitude over 25 years, has to start rising sharply. As the cost of hardware goes down, it does not matter if system software consumes more and more power, provided it gives the user increased productivity. Ease of use is critical, and we will have to eliminate the awkward languages like Cobol and Fortran."

Everything Fertig says is clearly true, but whether his last comment will be fulfilled in the next decade is very much open to question. More and more software is being written in Cobol, and as time goes by, more and more users who were once innovators become diehards.

Perhaps with good online development tools we may do away with coding sheets, but an awful lot more Cobol is going to be written before the language follows Latin into the history books.

CONFERENCES

Computer Graphics

BUSINESS graphics, drafting systems and simulation are some of the topics to be treated at Computer Graphics 80, to be held at the Brighton Metropole from August 13-15. It is organised by Online. The conference will highlight developments during the decade since Computer Graphics 70 was held at Brunel University. Details from Online Conferences Ltd, Argyle House, Northwood Hills, Middlesex HA6 1TS, tel: Northwood (09274) 28311.

STRUCTURED DESIGN

A technical briefing entitled Structured Design Methodologies Technical Assessment will be presented by Infotech from September 1-5 at the Holiday Inn, London. It is designed for DP staff responsible for evaluating potential innovations in systems and program design and will explore the structured design of Myers and Constantine and the Jackson rules for program design, as well as subsidiary design languages.

It will be given by Jeffrey Steel of Langton Information Systems, Malcolm Chorlton, an independent consultant, and John Buckle, European director of Softech. Further details are obtainable from Maureen Q Nichols, Infotech, Nicholson House, Maidenhead, Berks, tel: 0628 39101.

INTRODUCTION TO MINIS

A rapid introduction to minicomputer systems is provided by the IEE's vacation school, entitled Introduction to Small Computer Systems in Engineering Applications, to be held from September 7-12 at the University of Durham. The course is intended for young engineers and senior managers who are becoming involved with computers. Part One will cover basic design principles and Part Two, aspects from an overview of various types of computer to an appreciation of software. For details, contact the Institution of Electrical Engineers, Computing and Control Division, Savoy Place, London WC2R 0BL. Tel: 01-240 1871.

ELECTRONIC DISPLAYS

Electronic Displays 80 is the name of the sixth international exhibition and conference devoted to the technology of electronic displays. It will be held at the Mount Royal Hotel in London from September 9-11. The organisers are Network. The three main subjects of the conference are device technology; human factors and interactive displays; and display systems including the use of microcomputers. Further information from Network, Printers Mews, Market Hill, Buckingham MK18 1JX, tel: Buckingham (028 02) 5226/5227.

PERSONAL SHOW

The Personal Computer World Show is taking place for the third time and will be held at the Cunard Hotel, London from September 4-6. It was conceived to provide a marketplace where the industry could dispel the mystique which surrounds the word "computer" and emphasise the fact that computers are tools which work for people. It is sponsored by Personal Computer World and organised by Montbuild. Details from Montbuild, 11 Manchester Square, London W1M 5AB.

AUTOMOTIVE TECHNOLOGY

Isata 80 is the title of the international symposium on automotive technology and automation with particular emphasis on the use of computers in the automotive industry to be held from September 8-12 in Turin. It has the backing and support of the Isata Co-ordinating Committee, made up of senior representatives from the European motor industry, and the co-operation of Fiat. The conference language will be English. Further details from the Secretariat, ISATA, 42 Lloyd Park Avenue, Croydon CR0 5SB, tel: 01-680 3650 and 01-[illegible].

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SOFTWARE FILE by Claire Gooding

Children profit from Pet

A PRIMARY school with its own microcomputer is selling programs for computer assisted learning to raise money for further computer equipment.

Deputy head Don Walton of Houghton County Primary School has developed programs covering a wide range of subjects for ages 4½ to 13 years, and the machine, a Commodore Pet is in use all day every day by the children, as well as after school hours for program development.

Headmaster Keith Luton is as enthusiastic as his pupils, and keen to increase the limited machine time available at the moment.

Some of the boys have even mastered programming. But according to 10-year-old Richard Baldry, author of one of the programs for sale, "the girls don't seem keen on learning how to program."

Primary school programmers Andre Severs, Mark Cursley and Richard Baldry with Houghton County's overworked Pet microcomputer.

Q-Pac and teams sold

MANAGEMENT Science America is to buy the Q-Pac payroll system from its authors Q-Packaged Programs in South Africa.

The acquisition will include the UK and US marketing and support teams and the South African development team. But the South African parent company will continue to act as local agent for the payroll system, alongside MSA's subsidiary selling the existing MSA software.

MSA's UK managing director Dan Schmidt said: "In the last three years the market outside the US has provided an increasing proportion of MSA's revenues. The MSA payroll software is not flexible enough to handle the different legal and tax requirements of this market so we had the choice of revamping it, starting again from scratch, or looking outside.

"We are buying what we believe to be the best product available to complete our range of international cash management products.

"Q-Pac will also be useful in the US because it can run on some hardware that cannot take the MSA system — for example the IBM System 34," he added.

Release 1 of IBM System Product

IBM's latest announcements of upgrades on all fronts for large systems and significant enhancements to MVS suggest that customers are being encouraged to embrace the 303X series wholeheartedly while users sit back and wait for H (CW, June 19).

The **Job Entry Systems JES2** and **JES3** are to be fully integrated into the MVS System Extensions, to be referred to as Release 1 of System Product MVS/SP.

SP Release 1, planned for January 1981, will give base support for the new disc devices 3375 and 3380, plus disc and data streaming channels. It also gives operator console support for the 3270 large screen and colour VDUs.

Also planned for January 1981 is the **Data Facility/Data Set Services** dump restore which will support the new disc devices with improved performance, allowing selective control, full volume dumps and dataset dump restore.

There will also be a **Migration Aid** for the direct access storage device to assist users converting to the 3375 and 3380. The product modifies existing JCL, directing it to the new discs and produces JCL for copying and backup, modifying and optimising on block sizes.

Planned for April 1981, the licensed program **Data Facility/Extended Function** will provide improved performance for MVS and a new catalogue structure in which volume ownership restrictions are lifted. It will allow data in VSAM catalogues to be organised with far more flexibility.

In September 1981 Release 3 of the **Hierarchical Storage Manager** is due, providing extra control software for IBM's mass storage system which will support the new disc devices, improve performance and take automatic tape backups rather than backing up to disc or mass storage.

At the same time there will be a new version of the **Resource Measurement Facility** whose enhancements include exception reporting for such eventualities as disc pack over-use.

Release 2 of System Product is planned for July 1981 and will include upgrades that are the result of requests from the user groups Guide and Share. Also planned are architecture enhancements to 3000 range and global resource serialisation for MVS.

Why more airlines switch to Univac

IBM is losing its airline customers to Univac, on the strength of the Univac Standard Airline System software. Finnair and Cathay Pacific have both switched to Uni[illegible] another nation[illegible] buy the software for freight handling and cargo automation, and other deals are under negotiation.

Univac's multi million dollar investment in airline software goes back eight years. An international workforce of over 200 people, many of them drawn from the airlines, concentrates on specialised software at the development centre in Minnesota.

Univac's aim is to establish an industry standard against which airlines can measure themselves, by developing generalised application modules which will meet the common requirements of airlines as well as being easily adaptable to individual strategies and economic needs.

According to Jim Turner, director of the airline development centre, USAS has outstripped IBM's rival system PARS, having the advantage of newer technology in its development as well as Univac's long and close association with the airlines.

USAS runs on the 1100 series under the OS 1100 software which allows easier upgrades to larger mainframes. It is written mostly in Fortran, with some elements in Cobol, mostly for historical reasons since Fortran is heavily used by [illegible] of airlines.

Its main modules include passenger [illegible], automated ticketing, hotel reservation, a fare display model with look-up and information retrieval, passenger check-in, seat selection, fare quotations and a training module.

The cargo automation and freight handling subsystem has proved to be a selling feature on its own, dealing with all aspects of cargo including administration, distribution and accounting.

Another feature which has a [illegible] appeal is the message switching module of USAS [illegible] Scotland Yard.

Others planned or already under development include maintenance and engineering [illegible] with over 30 airlines.

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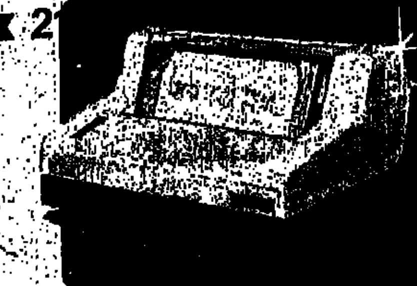
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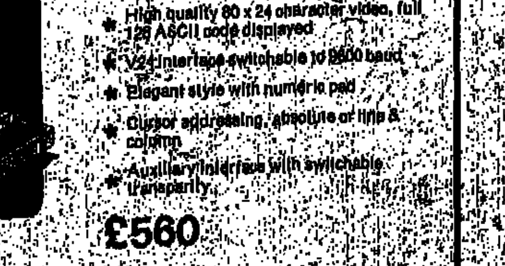
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OP SPOT

by Bernard Allen

Peter takes up 'too good to miss' opportunity

CAREER progression has always posed a considerable problem for members of the operations fraternity.

So it's good to hear from someone who, after ten years of meeting the demands of the operations department, and working shifts to boot, now has the sort of job where his experience will be put to good use.

I'm talking about Peter Reddy, who recently took up the position of assistant systems programmer at National Panasonic in Slough, Bucks.

"I've always been quite interested in the education side of things – you know, showing trainees how the system works.

"But the opportunity of systems programming came up and it was far too good to miss."

National Panasonic has an IBM 370/138, running under DOS. To be a successful systems programmer, Reddy will need an in-depth knowledge of IBM Assembler.

"As yet I don't know any IBM Assembler, so I'll have to put my mind to it and learn the language. I might get a book out of the library for that.

"I do know some RPG, though – I learnt it when I was an operator at Crane Packing in Slough.

"It was great because I was able to run jobs when I wanted to. I didn't have to wait around for the results of my runs."

During his ten years in operations Reddy has sampled the delights of a number of shift patterns, including the 12-hour shift system.

"I worked the 12-hour shift system for about a year when I was with Barclays Bank in Harlesden. I didn't enjoy it a bit – all you do is work, eat and sleep.

"And during the winter it was dark when you started at eight in the morning and dark when you finished at eight in the evening. I was glad to get off the eight-hour pattern."

His considerable operations experience includes four years as a shift leader at Johnson and Johnson in Slough.

I liked it at Johnson and Johnson. There was a nice atmosphere about the place and the people were easy to get on with. I tried to get into programming while I was there. I passed the aptitude test, but a graduate applied and sailed through the test, so he got the job.

Reddy found the role of shift leader demanding and enjoyable. And it enabled him to pass his knowledge on to the members of his shift team.

The company sent him on one of Hoskyns Education's supervisory courses and he found it very helpful.

"That course did me a lot of good. It gave me the confidence to speak up, put my ideas across, and show people what to do."

The course included giving presentations, learning how to do staff appraisals and dealing with dissatisfied users.

"We had to give a five-minute talk in front of the rest of the class. It was up to us to choose the subject – anything but computers."

The most enjoyable part of the course, in his opinion, involved Reddy and another student assuming the roles of shift leader and head of data control, respectively, and dealing with an unhappy user.

"We were told to sit in a room and wait for someone to come in. All of a sudden this woman – that threw us, because we'd assumed it would be a man – came in and started ranting and raving about her output being incomplete and having naughty messages written on it.

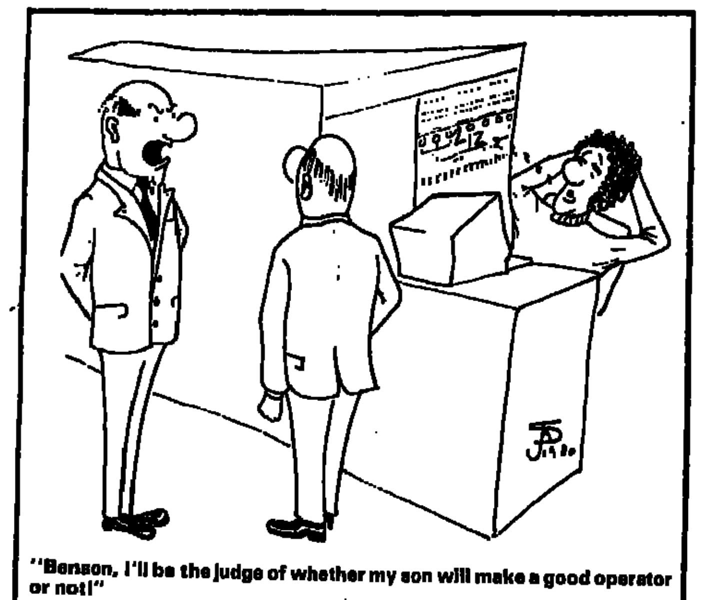
"It took us all our time to calm her down and deal with the problem. Afterwards we studied the whole thing on video".

The attitude of certain operations managers and programmers towards operations staff has annoyed Reddy over the past ten years.

"If there's a piece of machinery to be moved or some dirty work to be done it's always a case of 'get an operator'".

At one installation he worked at, the operators not only had to carry paper to and from the stationery store and load it on the printers: they also had to unload it from the delivery van.

"It's always been that way. I can't see it changing," he said.



"Benson, I'll be the judge of whether my son will make a good operator or not!"

Op Spot is the only place in the computer trade Press where operations staff can put forward their views, ideas and complaints. It's a forum intended for you – why not make use of it? Bernard Allen can be contacted on 261-8035.

How should a manager deal with a disinterested employee?

MANY an operator has to put up with an operations manager who pays too little attention to the career aspirations and training needs of his staff.

When confronted by such a manager, the career-minded operator has the choice of trying to learn and progress in spite of it all, or leaving the installation to seek fame and fortune elsewhere.

But what about the poor manager who cares about his staff, only to be faced by an operator who shows no interest in his work?

Not as uncommon as you might think, if we're to believe what certain people outside the operations fraternity tell us about operators.

The subject of disinterested employees and how managers might deal with them is discussed in a paper from Auerbach, entitled How To Deal With Unsatisfactory Performance.

"Most managers, including data centre operations managers, have at least one employee they would just as soon see find other employment. Managers spend much time anguishing over such employees.

"Unfortunately, managers often attempt to resolve the problem by ignoring it. The DCOM often continues to accept the employee's substandard performance, and lives with the sense of uneasiness brought on by the knowledge that he is not fulfilling his responsibilities to his organisation, to the employee, or to himself."

The author stresses that the disinterested employee is very unlikely to change of his own volition — it's the manager's responsibility to alter the situation.

He says that maintaining morale is one of the manager's most difficult tasks, and that it is made even harder when he has to contend with someone who shows little regard for the centre.

"Employees have the right to be treated fairly. If the data centre manager ignores this problem employee, other employees will quickly realise that there is a *de facto* performance standard for certain employees that is not as stringent as the general standard."

He reiterates that the manager must deal with the problem employee with speed and efficiency. Otherwise, he says, it will result in poor morale all round and have a detrimental effect on the service to the user.

Comprehensive training service offered by ICL

ICL offers a comprehensive training service, providing theoretical and practical hands-on training as well as supervisory and management courses.

That message comes from Michael Perkin, manager of operating systems training at ICL in Beaumont, Berks.

Prompted by an Op Spot piece on courses for operators (CW, June 26), he comments, "Readers of Op Spot may have drawn the mistaken conclusion that operators of ICL equipment have a meagre choice of training courses available to them.

"Whereas this may be true of training organisations outside ICL, it is certainly not true of ICL Training.

"The two dozen or so standard course types held at our training centres are also frequently run in tailored form on-site at customer installations."

Well, it's reassuring to know that ICL provides such a wide range of training courses. The reason I used the term "IBM Rules — OK" was simply because independent training organisations seem to cater almost exclusively for users of that manufacturer's equipment.

Why West Midland ops are holding up doctors' £3½ million back pay

THE dispute involving operators and programmers at the West Midland Regional Health Authority computer centre goes to show, once again, the importance and power of computer staff.

Staff at the centre are refusing to process pay awards made to Midlands doctors and dentists in April. The back pay now totals about £3½ million.

They are taking this action because they are unhappy with a pay offer of 14½% which, if accepted, would break the traditional link between the Health Service's administrative and clerical grades and the annual pay awards of the Civil Service.

The computer staff are acting on behalf of the administrative and clerical grades of the Health Service and with the full backing of their union, the National Union of Public Employees.

Peter Owen, operations manager at the WMHA computer centre, told me, "The fact is we don't want to break the link between our rises and those made to Civil Servants.

"We would be quite willing to accept 18% from June rather than April. It's not so much the money as the link between the Civil Service annual awards and ours.

"In addition, we're concerned about the fact that the operators and programmers within the Health Service get about £1,000 to £1,500 a year less [illegible] counterparts in the [illegible]tor."

In the view of the [illegible] Medical Associa[illegible] WMHA is totally respo[illegible] the payments and sho[illegible] alternative methods [illegible] the back pay.

The WMHA, however, [illegible] out that to do so migh[illegible] prompt further action [illegible] computer staff and [illegible] members of the National [illegible] of Public Employees.

The doctors and den[illegible] understandably rather an[illegible] about waiting for their [illegible] rise and have issued [illegible] against the WMHA [illegible] breach of contract.

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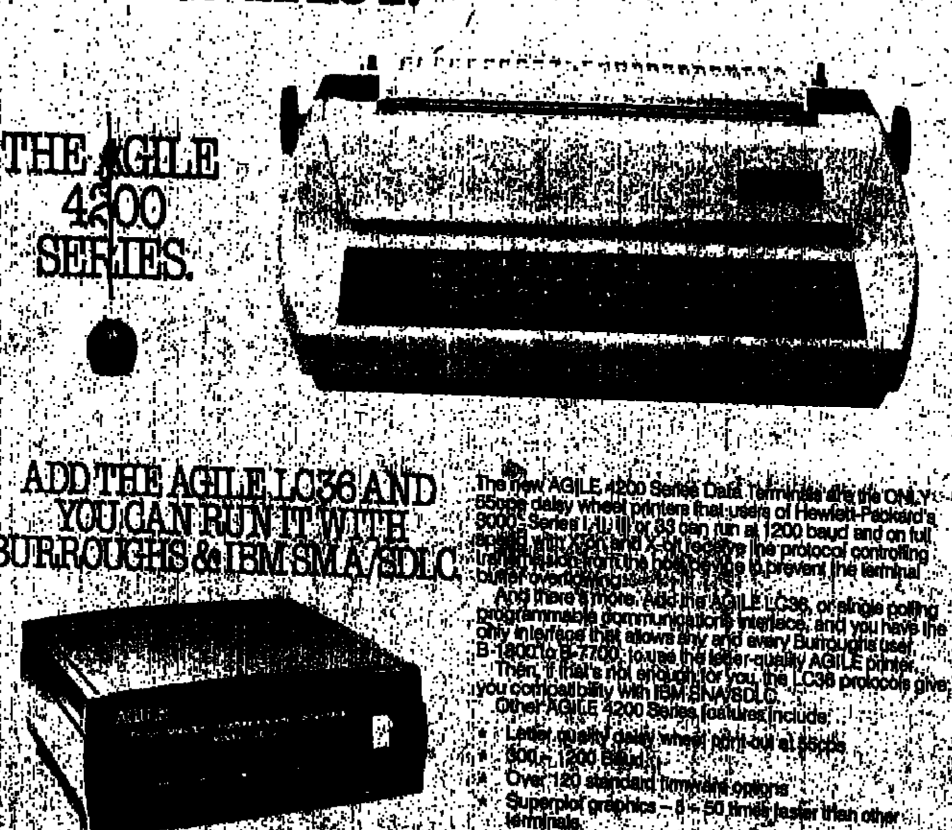

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ITT X25 interface for PSS network

SOFTWARE to interface the ITT 3805 and 3809 front end processors to X25-based public packet switching networks has been under test since May at two customer sites in France that are connected to Transpac, and will be available from ITT in the UK early next year for use on British Telecom's PSS packet network.

The software was developed by Comten in the US, the company which also designed the front end processors and which was acquired by NCR last year. ITT funded the £1 million development.

The price is expected to be £600 for the main program. This is the PAX25 packet adapter which handles levels two and three of X25 — the link and packet levels. The terminal protocol converters will cost £200 each.

The first packet adapter, PA1, will allow an asynchronous terminal calling across the network to select an application program in the mainframe behind the front end processor and to communicate with a program written for an IBM 2741 terminal, or using a teleprocessing access method.

Later packet adapter modules to be introduced from the end of next year will support the IBM bisynchronous and SDLC protocols and allow switching between public packet network connections and ITT's own CNS communications networking system.

ITT believes that public packet networks will radically improve international data communications, by making it simple to connect to a terminal anywhere in the world, while at the same time complementing existing leased line and dialled network services.

Comshare links to Telenet

COMSHARE has linked its Telegrid communications network to GTE Telenet, the international X25-based packet switching network, providing access to its London bureau from a further 20 countries including Spain, the Philippines and Australia.

The US and Central Europe were already served via Telegrid, a non-standard packet switching network based on over 100 Interdata 1-50 minis that went into service four years ago.

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Million accesses award to Baric

THE first "bronze keypad" award, for a Prestel information provider whose database has been accessed one million times, has gone to Baric Computing Services, the bureau subsidiary of ICL and Barclays Bank which maintains a selection of games on Prestel.

The Baric database has now been accessed two million times, but the company will have to wait for 10 million accesses to get a "silver keypad".

Baric also shared with Eastel, another British Telecom Prestel award, the Pressy — the Oscar of viewdata — for the most entertaining database. Five Pressies were awarded in all, the others being to British Rail for the most informative database, Mills and Allen for the best presented, Viewtel for the best value for money, and GEC for the best graphics.

Users vote for the information provider of their choice through response frames in Prestel's own database.

● The Viewdata Department at Baric Computing Services are pictured with their Pressy trophies.

ICL 'much more than large systems'

A COMPELLING exposition of the power and potential of ICL's two major technological innovations, Cafs and the Dap, was presented to the Online Future Systems Forum last week by Terry Ward, business manager for ICL large systems.

ICL, he said, saw large systems as much more than simply large scale mainframe computers. A large system in ICL's view was a collection of processors networked with many terminals, both specialised and general.

And two of the exclusive plus points that ICL had to offer were Cafs, the content addressable file store, and Dap, the distributed array processor.

"Managers constantly ask unstructured questions," declared Ward, "such as 'where in the company do we have a man who is single, speaks Swahili, and is able to fly to Africa tomorrow?' If you ask your personnel department that kind of question, it goes into a flat spin and can't answer.

"But now, within ICL, we have 30,000 employee records on Cafs, and we can come up with answers to questions like that in seconds. Managers and their assistants need to interrogate databases with those kinds of unstructured questions, and they don't have the time to learn the complexities of a structured database management system.

"For Cafs we have developed simple search macros and it is possible to search an 800 megabyte file in seven seconds.

"With Cafs, 10 discs are read at the same time, and parallel searching gives us a 3 to 3.5 megabyte per second data rate — which is comparable with the data rates on IBM's newest discs announced last month."

Turning to the Dap, Ward pointed to the problem of the traditional approach to solving complex mathematical problems — that of putting a fast arithmetic processor on to the back of a standard pipelined processor.

"Sequential processing is fine provided you do not destroy the sequence but as soon as you put in IF statements, Fortran performance degrades alarmingly."

The ICL solution is once again parallel: instead of building a separate processor or discrete back end, the approach is to treat the Dap as intelligent main memory, in effect a 64 x 64 array of discrete processing units, each with 4K-bits of storage, which appears to the operating system as two megabytes of main memory.

"It is handled by the VME/B operating system , and uses all its facilities; at the moment we are using 4K memory chips; if we went to 64K chips, we could have 32 megabyte Dap. By incorporating a Dap, it becomes possible for a standard 2900 to run in either normal mode or parallel mode.

"The price-performance advantages are dramatic: it costs £600,000 on top of the price of the mainframe, but in image programming we have benchmarked it at 300 times the performance of an IBM 360/195 and between 10 and 30 times a CDC 7600.

"In a set of astronomy computations, it completed in 23 minutes a series of calculations which took a day on a conventional machine, equivalent to a 25 to 30 mips rating.

"The use of the Dap is, at present, confined to large-scale scientific work but, by the mid-1980s, we expect it to be applied to commercial processing."

300 more jobs

PLESSEY plans to manufacture volume quantities of printed circuit boards for its own and external customer requirements, at its factory in South Shields, which was opened last week by Sir Keith Joseph, Secretary of State for Industry. This will create about 300 jobs within the next two years.

Polytechnic centre to help small firms

A CENTRE designed to help small firms to use computers is to be set up at North London Poly in September, partly funded by a £20,000 grant for equipment from Hackney and Islington Councils under their inner-city regeneration programmes.

Announcing the plan during the London Computer Fair last week, the Poly's assistant director for resources David Croome said local industry was largely composed of firms employing 10 people or less which lacked expertise in many areas the college could help with.

The centre would initially open four evenings a week, he said, plus all day Thursdays and Saturdays and would draw on existing teaching staff, senior students and volunteers from the North London Hobby Computer Club's business computing groups.

Terminal update

UNIVAC Uniscope terminals at British Airways offices all over Europe are to be replaced by 280 Type 100 VDUs from Videocom of Henley-on-Thames.

The Univac VDUs were installed when reservations for the European division of BA were run on Univac mainframes. They are now handled by the BABS system based on IBM compatible Amdahl processors.

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PEOPLE and EVENTS

We are the Champions

THE ICL Information Processing Team (above) admire the trophies they won in the Business Equipment Trade Association 7th annual golf tournament, played over 36 holes at Foxhills Golf and Country Club, Ottershaw, Surrey.

Graham Castell (left) holds the trophy donated by the magazine Business Systems and Equipment, for the best individual score; David Tucker (centre) has the President's Cup, donated by Kardex, which was won by the team, whose third member is Peter Nice.

The tournament was entered by teams from, among others, Facit-Addo, IBM MDS, Nexos, NCR, Honeywell, and Univac.

Pactel MD appointed to Monopolies body

PACTEL's managing director, Holman Hunt, has been appointed to the Monopolies and Mergers Commission.

Hunt has been in the computer industry since 1957, most of the time with PA. In the 1960s he built up PA's computer business, and in 1970 joined the board of PA Management Consultants, where he was responsible for directing a group of divisions operating in the computer field.

On the formation of Pactel, PA Computers and Telecommunications, in 1976 he became its managing director. He has also been president of the Institute of Management Consultants.

The Monopolies and Mergers Commission exists to advise the Secretary of State for Trade on possible monopolies and on whether they, and planned mergers, are against the public interest. It also advises on situations which may be anti-competitive, and on possible abuse of "positive planned monopoly situations".

Martin Harding has been appointed marketing manager of Solartron's Industrial systems division. Previously he was sales manager. In the same division, **Colin Robertson**, formerly market specialist for engine test systems, has been promoted to product manager for the same area; he is assisted by **Melvyn Harries**, sales engineer, who has joined from Racal, where he was installations and commissioning leader on Middle East contracts; **Peter Withey** has been promoted from market specialist to product manager for process plant systems. **Eric Pretty**, from Bell & Howell, has joined the division as market specialist for power generation contracts. He replaces **Mick Snyder**, who has the newly-created post of software development manager.

Margaret Matthews, previously with Northern Word Processing marketing Philips equipment, has been appointed market support representative with Monotype Communications. **Alan Stringer** has joined Monotype, as a sales executive, Northern region, from Olivetti, where he was also a sales executive.

Norman Horner has been appointed to the new post of development sales manager with Kenrick and Jefferson's business forms division.

Higgins

Tony Higgins leaves CW

Tony Higgins, acting editor of Computer Weekly, is leaving to join Sperry Univac UK as a consultant dealing with the company's press and publicity activities.

Higgins, who as news editor and deputy editor has been involved with the running and production of Computer Weekly since its inception in 1968, has played a major part in the development and success of the journal which has always been a world leader in the computer industry.

Betty Prince, until lately international memory product marketing manager with Motorola in Austin, Texas, is moving to East Kilbride, Scotland where her title will be memory product marketing manager.

Nominate a Marconi Fellow

NOMINATIONS are invited by October 1 for the seventh Marconi International Fellowship, a grant of $25,000 to be made next year to a contribution to communications technology or its application in improving the lives of citizens.

This is interpreted broadly to include computer-aided instruction, medical diagnosis and techniques for overcoming handicaps.

Previous winners of the award lived in India, Japan, the UK and the US.

Nominations should be sent to the Marconi International Fellowship, Aspen Institute of Humanistic Studies, 1229 University Avenue, Boulder, Colorado 80302, US.

Alan Senior, until recently managing director of Hyden Electronics, has joined Harris as product manager of the composition systems division.

Tony Kaminski, former advertisement manager of Systems International and Computer Weekly, assistant display advertisement manager, has joined Centaur Financing, the IBM broking house, where he will be responsible for peripherals marketing. Kaminski's introduction to computers was as a scientific officer with the Defence Ministry where he used an Elliott 803 for ballistic calculations.

Kaminski Senior

OBITUARY

Peter Haines

PETER HAINES, director of Software Sciences International, has died at the age of 57.

Haines became involved with computer systems in 1954 when he worked on the design and implementation of the Apollo ATC system for the Oceanic area. In 1959 he joined the aerospace consultancy General Precision Systems, and became managing director in 1970.

In 1971 the company merged with Software Sciences and he took the position of marketing director which he held until his death.

Philip Brown has joined the NCC to handle the Cobol aspects of the Standards in Computing programme. Previously, he spent nine years in software engineering at Burroughs, and he has lately been chairman of the ECMA technical committee on database, and a member of ECMA, Codasyl, BSI and ISO Cobol committees.

Nat Wolff has joined X-Data as controller, spares supplies and services. His last job was as repairs controller with DRI.

DIARY

SEPTEMBER 1-3
Microprocessor workshop. Computer Lab, University of Liverpool.

SEPTEMBER 3-5
Logic and microprocessor system design course. Computer Lab, University of Liverpool.

SEPTEMBER 8-10
CAPP-80, typesetting seminar. Royal Lancaster Hotel, London. Details: CAPP-80 Conference Unit, 01-836 8888.

SEPTEMBER 22-26
Micad 80, CAD conference. Micado, Paris.

SEPTEMBER 24
New technologies for information retrieval. BCS Information Retrieval Group, London.

NOVEMBER 6-7
Minis, micros and terminals, conference. BCS/IIS, Manchester.

NOVEMBER 14-16
More than just techniques, conference. British Production and Inventory Control Society, Blackpool.

DECEMBER 18
Computers in financial BCS Information Retrieval Group), London.

10

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MICRO NEWS

by Eileen Stainer

STILL no decision has been reached on the future of Inmos, the NEB-backed UK microelectronics company. The National Enterprise Board is currently reviewing the company (for the third time) in the hope that the Tory government will grant the second £25 million promised by the previous Labour government. If it does, Inmos in the UK will have a future as the sole UK manufacturer of standard microelectronics components.

Before any decision is made, however, Sir Keith Joseph, Secretary of State for Industry must answer the question he posed at the last Inmos debate. Does the UK need to produce its own standard integrated circuits, or can it rely on foreign companies setting up here?

Inmos's answer to this is that this country does need its own standard LSI manufacturing facility, and its own research and development in that area, in order to keep at the front edge of the technology. According to Iann Barron, the UK director, his company will do just that; Inmos will be innovative in about 10 years' time.

Does UK really need Inmos?

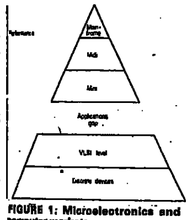

FIGURE 1: Microelectronics and computer markets.

In Barron's view, US company offshoots set up in the UK do not operate at the front edge of technology, and therefore should not be relied upon as a source of standard integrated circuits. This factor is becoming more important as silicon itself represents increasingly a higher cost factor in microelectronic products.

If Inmos does ever reach the stage of being innovative and develops high demand products this will benefit both company and country. In the meantime the company is concentrating on production of standard LSI devices such as 16K static RAMs, 64K dynamic RAMs and microprocessors against fierce competition.

Taking the opposite view, Intel believes that the UK should not be producing its own integrated circuits, but should rely on other companies, including itself, to supply them. In fact engineers in this country should be concentrating on utilising them and designing applications.

Intel sees the microelectronic and computer markets in a single triangular-shaped spectrum (see Figure 1) with increasing performance moving up the triangle. At the lower performance end are discrete devices and VLSI devices, while at the top are mainframes, midis and minicomputers, leaving a gap in the centre of the triangle. This gap, the "applications gap", Intel believes represents between £1 and £2 billion in the UK over the next five years.

According to Tom Lawrence, vice president for Europe, hardware and software technology is already increasing in sophistication faster than it can be used. Engineers in the UK should be taking advantage of this and exploiting the applications area.

In the microprocessor development business Intel stresses that the development of a basic CPU alone takes an average of 12 man months. The input/output communication takes another 60 man months, the operating system development another 120 man months, and applications languages like Pascal and Cobol another 1,200 man months.

To become competitive in the microprocessor business Inmos has to put in a similar amount of effort. This leads to a second question that Sir Keith Joseph is probably trying to answer. What chance does Inmos have of succeeding in its aim?

Paul Schroeder, design director, originally felt that Inmos was in a position to pull off the same trick with its memory products, the 64K dynamic RAM and 16K static RAM, that Mostek pulled off with the well-timed introduction of its 16K dynamic RAM (CW, November 8, 1979), now an industry standard.

When working for Mostek, Schroeder designed a 16K dynamic RAM that was better suited to industry requirements than others already on the market, including Intel's. Mostek released it just as Intel's sales started to rise and consequently took over the market.

If Inmos had been allowed to keep to its schedules this would still be the case. Now, the seven-month delay could jeopardise the whole plan.

Inmos' 16K static RAM, called the IMS 1400, is due to be sampled at the end of the year, while Intel's 2167 is to be sampled this quarter, ready for volume production in the first quarter of next year. Mostek has already sampled its 4164 (CW, July 10).

Other competitors include Texas Instruments and Motorola who plan to be in volume production by the end of the year and early next year, respectively. Motorola will sample its 2K by 8-bit 4016 in Europe in November, and its 16K by 1-bit 2167 early next year.

Fairchild's 2K by 8-bit device will be available in sample form in the last quarter of this year and should be in volume production by the second quarter of next. Meanwhile, at least three Japanese companies will be participating in the 16K static RAM market: Hitachi, Toshiba and Mitsubishi.

On the 64K dynamic RAM scene, Inmos has almost lost its chance. Motorola has already shipped in volume to its European distributors, and Texas Instruments has just released samples in the UK, hoping to be in volume production next year. Hitachi produced samples in April this year.

Mostek is due to start releasing samples next month and expects to be in volume production by the end of the year, while Fairchild hopes to be in volume production early next year. National Semiconductor and Intel do not expect to have samples until next year. NEC, Toshiba and Fujitsu will also be competing.

DEK Printing Machines' 1202RS modular system prints onto thick film circuits, liquid crystal displays and microelectronic components up to 102 by 102 millimetres at a resolution of more than ±25 microns. At a cost of £8,170, the basic model for laboratory work has to be loaded by hand and will print 600 substrates per hour. A fully automatic version, which costs around £10,000, will print 1,200 substrates per hour.

The longer Inmos is delayed and prevented from mass producing its memory products, the less are its chances of succeeding.

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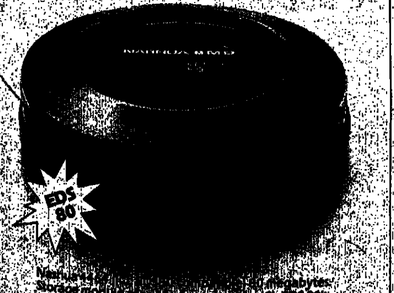

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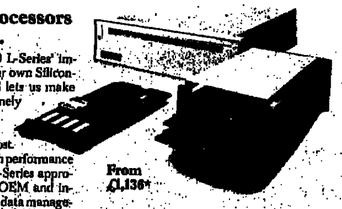

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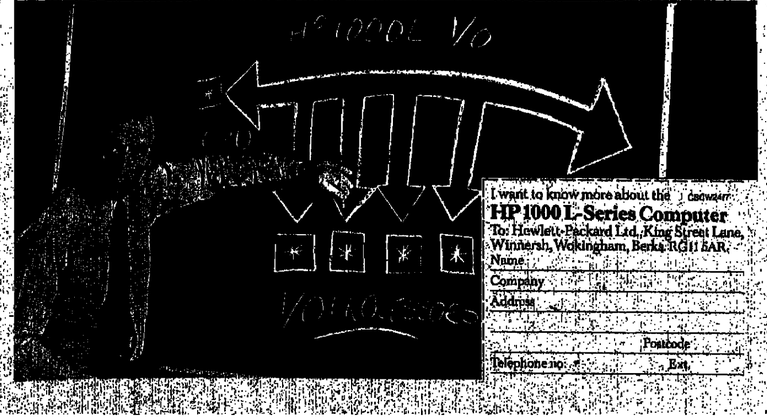

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MALCOLM PELTU TALKS TO PROF WILKES WHO HAS RETIRED AFTER 34 YEARS AS HEAD OF CAMBRIDGE UNIVERSITY'S COMPUTING LAB

Professor Maurice Wilkes became director of the Cambridge University Mathematical Laboratory in 1946, which became the Computing Laboratory in 1970. Construction on its first computer, Edsac, began in 1947 and the first automatic calculation was performed in May 1949, with a regular user service beginning in 1950.

In 1951, Professor Wilkes, with Cambridge colleagues David Wheeler and Stanley Gill, published what is now regarded as the first programming book, The Preparation of Programs for an Electronic Digital Computer.

He recalls that, at the time, the publishers, Addison-Wesley in the US, doubted whether there would be a market for a book on the new-fangled programming concept so the terms of the contract were that no royalties would be paid on the first 1,000 sales, double royalties for the next 1,000 and then, normal royalties for further sales. With a sigh, Professor Wilkes recalls that they sold over 2,000.

In 1951 Professor Wilkes also put forward the concept of microprogramming, a phrase he coined, including, he claims, the concept of "bit-slicing" which has now become a major architectural feature of many systems.

In 1952 he presented a paper in Toronto which explored the important distinction between systems and applications programming.

The work of the Edsac team on programming methodology provided a crucial influence on early software development and computer use.

During the 1960s and 1970s, Professor Wilkes became more interested in questions of systems reliability and distributed processing, which culminated in the development of the Cambridge Ring for which his successor, Roger Needham, received a BCS Award in 1978.

A lifetime of discoveries

NEXT month, Professor Maurice Wilkes will start his latest adventure of discovery. After a lifetime at Cambridge University where he has led a brilliant team into uncharted computing territory, he is moving to the US to do research for Digital Equipment Corp.

The achievements of the Cambridge computing team which he has directed since 1946 represent milestones in computing history and have become an intrinsic part of modern DP life.

Concepts of programming methodology such as subroutine management, debugging aids and even structured programming can trace their roots to work on the first Cambridge computer, Edsac.

Professor Wilkes himself coined the term "microprogramming" to describe the level beneath the instruction set interface and one of the Edsac group, Professor David Wheeler who is still at Cambridge, can lay claim to the first operating system routine, a 40-instruction link loader for Edsac.

More recently, the most important achievement of the laboratory has been the Cambridge "Ring", one of the world's leading local networks, which has enormous potential for distributed office information systems as it allows simple interconnection of a variety of devices along a wideband data highway.

It is interesting that the professor's new employer, DEC, recently joined with Xerox and Intel to develop such local networks, based on the Xerox Ethernet (CW, June 26). At this stage, however, Professor Wilkes said he had not thought about any specific work that he will be doing at DEC as the mechanics of moving to the US are dominating his mind.

He declined to make any comparisons between Ethernet and the Ring, other than to say that each had its merits and its limitations.

Making theoretical comparisons is not Professor Wilkes' style. As he says, "I have always been a practical man."

His approach to the development of Edsac illustrates his delight in practical experimentation rather than theory. In fact, Professor Wilkes' contribution to computing is probably best viewed in relation to commercial data processing rather than computing science. He could be seen as one of the first — if not *the* first — data processing manager.

When he established the Edsac computing service in May 1949 he gave prime consideration to its role in providing a service to users. And he adopted two principles which are still part of any DP manager's credo: be technologically conservative and give priority to good software development methodologies.

The main innovations of Edsac (Electronic Delay Storage Automatic Calculator) were in its software strategy and nothing new was attempted with the hardware — the memory consisted of five foot long tubes of mercury.

His decision to concentrate on creating a stable program development environment based on systematic design and debugging methodologies, strict documentation standards and ease of user programming may not seem remarkable now.

But at the time, he recalls that programming was dismissed either as a "dogsbody task with little intellectual challenge" or as being of minor significance because programs would be needed to solve only a few problems.

At a Toronto conference in 1952 he also identified the important distinction between systems and applications programming. To ease applications programming, Edsac had a simple symbolic order code at a time when digital machine code programming was the norm.

Professor Wheeler — whom Professor Wilkes has described as a "programming genius" — developed the "initial orders" link loader to read the [illegible] coded programs and to [illegible] simple and flexible [illegible] of subroutines. The late Stanley Gill developed [illegible] aids and the program [illegible] library was built up by [illegible] the Edsac group.

This practical orientation [illegible] Edsac reached fruition [illegible] used as the basis for the [illegible] commercial computer [illegible] veloped in the early [illegible] Lyon & Co. The first [illegible] Leo used Edsac's order [illegible] Professor Wheeler's [illegible] orders routine and the [illegible] subroutine library was [illegible] the basis of a scientific [illegible] service.

Leo provides an [illegible] link from the past to the [illegible] The "eo" in Leo stood for [illegible] tronic office and it is in the [illegible] tronic office that the Cambridge Ring will have its major [illegible]

But Professor Wilkes is [illegible] particularly interested in [illegible] information applications [illegible] but in the provision of [illegible] tributed computing service.

He also has little interest [illegible] the wider social and [illegible] ment implications of [illegible] tion technology. He prefers to stick with practical [illegible] logical developments [illegible] larly in microelectronics [illegible] still brings out a delight [illegible] boyish enthusiasm [illegible]

● Turn to page 13

Professor Wilkes stands on history: he is outside the current computer laboratory which is next to the site of the Edsac machine room.

[illegible] but these bits of DP history were to be [illegible] at his farewell dinner on Friday. The black [illegible] printed circuit board is from the Ring and [illegible] the board.

One of the most important achievements of the laboratory has been the Cambridge Ring which is said to be one of the world's leading local networks and to have big potential for distributed office information systems, as it allows simple interconnection of a variety of devices along a wide data highway.

Here Professor Wilkes shows Malcolm Peltu the circuitry in the Ring's central unit which is housed in the laboratory's Titan Room.

Most of the circuitry is on removable boards, one of which was to be given to him as part of a retirement presentation. Each of the boards can now be replaced by the same circuitry on a micro chip.

Milestones in history that have become part of modern DP life

● From page 12

seem strange to those people who say they feel intimated by his spiky, didactic manner.

However, he does dismiss with acid irritation views which he particularly disapproves of. For example, he is enthusiastic about personal computer 'hobbyist' developments. "Never underestimate the young," he said, with eyes asparkle.

But what about those, such as Professor Edsger Dijkstra, who claim that bad programming practices in the hobby world have set programming back 25 years?

With some anger, he replied that this was a typical elitist view of those who remember a time when there were a few highly skilled programmers. Even if some Basic programming is poor, he said, the placing of computing power in the hands of young enthusiasts should be welcomed wholeheartedly.

He views personal computing with a special affection because it captures the spirit of amateur exploration which characterised the early days of radio hams.

As a boy, Professor Wilkes was keen on radios. His initial research at the Cavendish Laboratory was in wave propagation and, during the Second World War, he worked on radar development. But he says that his amateur passion for radio waned when he began to study the subject seriously.

Of the major developments in DP during the last three decades, Professor Wilkes has personal recollections of two. During the 1950s he remembers being present at the Massachusetts Institute of Technology (MIT) when magnetic core memory was tried out for the first time. He recalls the "look of awe" on everyone's faces because it "just worked" — and worked reliably.

Then, in 1963, on a summer study tour at MIT, he saw his first online computer which was part of the Project MAC pioneering time-sharing system.

Both these events signified major advances in DP, with core providing [illegible] reliability and time-sharing the opportunity to give more users access to machines. "After all, distributed processing is really a development of the concepts introduced with time-sharing," he commented.

But the greatest revolution — microelectronics — occurred without any signal event to stick in the mind but just a rapid surge of exciting possibilities. "We are only half way through the semiconductor revolution.

"We have got low cost processing power but have not yet seen the availability of really low cost memory. When this happens, the potential for distributed computing will be expanded significantly," he commented.

But he refuses to be drawn into trying to predict specific future developments, as he believes that the only predictable thing about the future is its unpredictability.

Yet there can be few moments in DP history which showed such foresight as the time in the early Edsac days when Professor Wilkes was struck, as if by lightning, with the vision that programmers in the future will spend more time debugging programs than writing them.

It is fortunate for today's programmers that he put so much effort into trying to establish programming standards which would at least limit the toil to come in the bug-ridden future.

Of those early days, there is one memory which stands out to Professor Wilkes as of most significance — when, in the summer of 1946, he met John Mauchly and Presper Eckert at the Moore School of Electrical Engineering of Illinois University. Their personal enthusiasm and the excitement of their proposals for stored program control inspired the young Wilkes to start building Edsac on his return to Cambridge.

"It is a glaring injustice that Eckert and Mauchly have not been recognised for their contribution to computing in the way that the Wright Brothers have achieved fame in aviation," he said.

John von Neumann has often been recognised as the author of a report published in 1945 for the Edvac system which first formalised the idea of stored program control, but Professor Wilkes said that it was Eckert and Mauchly who really deserved the credit — something which has now been widely recognised.

Professor Wilkes' career as head of the Cambridge Computing Laboratory was interrupted by the war. He had worked with Leonard Jones, Professor of Theoretical Chemistry, on a differential analyser before the war and had been appointed to head a mathematical laboratory when war broke out.

On his return from the war, where he served in the RAF, he took up the Cambridge job. Then the Moore School seminar established the path he would take.

The Edsac work received a major stimulus when Douglas Hartree, Professor of Mathematical Physics, chose the subject of automatic computing for his inaugural lecture in 1947 and he kept in close touch with Edsac developments, primarily as a user.

From the moment of Professor Hartree's declared support, there was no looking back for the Edsac service. DP managers can, however, look back enviously to the growth of the service because Professor Wilkes recalls that he never had to try to sell the benefits of using it.

"We always had plenty of people wanting to use Edsac," he said. "At first it was the younger research students who were most keen but then the interest spread throughout all academic levels."

One of the most significant Cambridge computing innovations had nothing to do with technology but with the "excellent tea and cakes" which Professor Wilkes recalls being served at regular meetings at the university, held every other Thursday.

Although these tea-time seminars strated out as a get-together within the university, the word quickly spread to the other research centres working on computing, most notably at Manchester University and the National Physical Laboratory.

This has enabled British computing pioneers to receive mental nourishment and have a cross-fertilisation of ideas, as well as the delightful tea and cakes.

The intellectual stimulation and personal camaraderie of the Cambridge seminars was one of the forces which led to the formation of the British Computer Society. In 1957, Professor Wilkes was its president for the first three years.

He now regrets that the BCS seems to have moved away from his original conception of the society as an "open forum" for discussion but he recognises the need for its current emphasis on professionalism.

However, it is not in Wilkes' nature to dwell on the past. Which is why, next month, he will not be going into retirement but will be starting a new job. And he will be eagerly searching for some new discoveries to add to a list that would already be more than enough for most people.

WILKES—the placing of computing power in the hands of young enthusiasts should be welcomed

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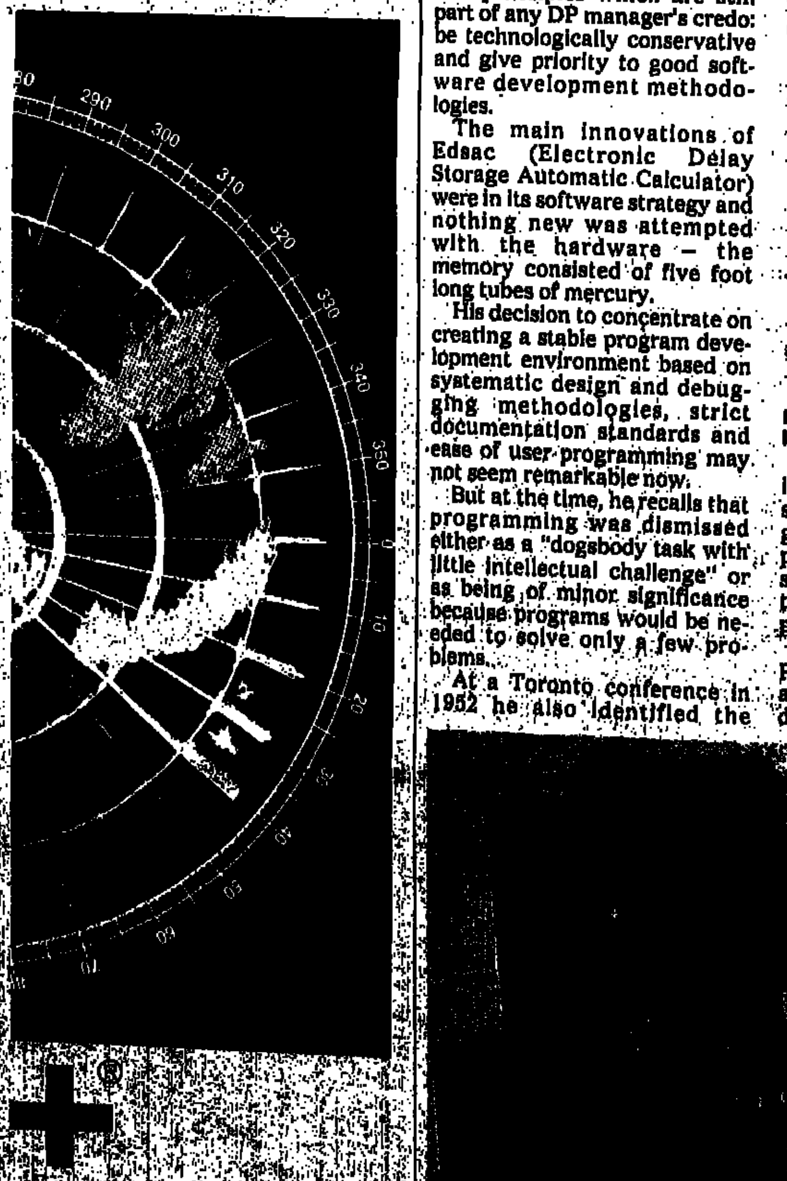

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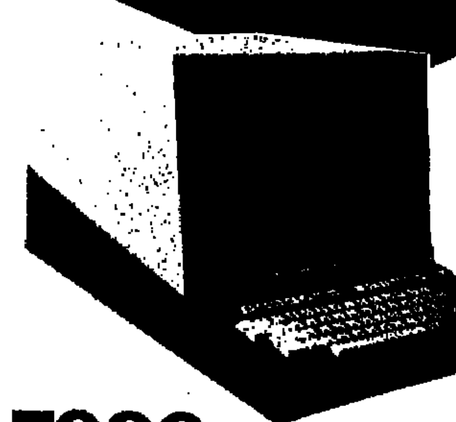

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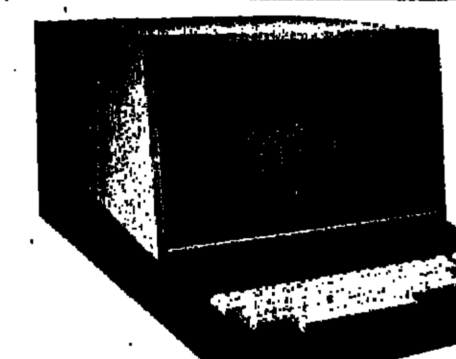

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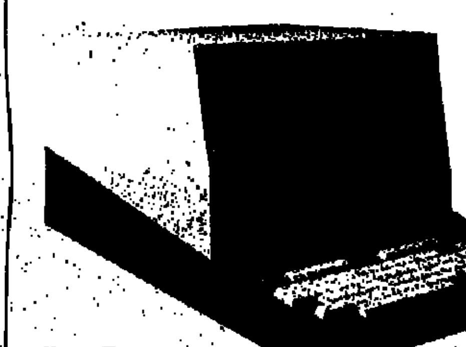

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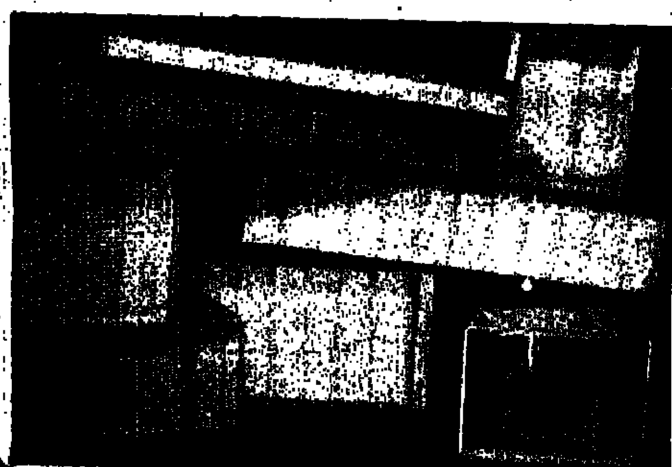

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ADVANCED FILE DESIGN—Part 15

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THIS series has provided the reader with a review of the present state of knowledge in the field of file design. Taken together with Basic File Design, all the principles that a designer requires to optimise file performance have been set out. This is intended to cover the needs of professional data processing staff; however, information at two other levels is often useful.

The first is a full explanation of the derivation and application of the various principles, with worked examples where necessary. The second is reference to the original sources from which information has been obtained. This concluding article covers these two areas.

The authors have not in the past been able to recommend any single book that covers all aspects of file design. For this reason Owen Hanson has recently completed a comprehensive text for Pitmans, which will shortly be published under the title **Design of Computer Data Files**. This is intended to act both as a reference and learning text, with a great deal of tabular information to aid design decisions.

The original sources of information given in this series are numerous, and for convenience they have been grouped into a number of areas:

Record format and handling

Optimisation of Tape Operations, by E. S. Walker, Software Age, Aug/Sept. 1971, 16-17.

Blocking Sequentially Processed Magnetic Files, by S. J. Waters, Computer Journal Vol. 14, No. 2, 109-112.

These papers cover the derivation of theoretical optimum blocking factors on magnetic tape. In practice an integer solution is required, as blocks of 6.38 records are not generally feasible — although J. Inglis and E. G. Dee discussed the possibility in **Flexibility of Block-length for Magnetic Files**, Computer Journal, Vol. 16, No. 4, 1973, 303-307.

Walker (above) and B. J. Edwards, in **Choices of Block Sizes for Magnetic Tape Files**, Computer Journal, Vol. 20, No. 1, 1977, 10-14, give programs to calculate the optimum blocking factors, Walker in Fortran, and Edwards in Algol. This last provides the optimum integer solution.

Sequential files

Sectioning of magnetic tape files was discussed in Basic File Design. **The Choice between Magnetic Tape and Magnetic Disc for Sequential File Processing**, by Owen Hanson, appears in the Proceedings, ADV Kongress, March 1980, Vienna. This provides the detail on which the analysis given in the series was based.

Statistical Searching of Sequential Disc Files, also by Owen Hanson, is a City University Business School Working Paper available from the Librarian, CUBS, 23 Goswell Road, London, EC1M 7BB.

Direct files

Addressing algorithms have been discussed by many writers. The most important contributions are:

Addressing for Random Access Storage by W. W. Petersen, IBM J. Res. Develop, Vol. 1, No. 2, April 1957, 130-146.

File Organisation and Addressing by Werner Buchholz, IBM Systems Journal, Vol. 2, June 1963, 86-111.

These two papers reviewed the whole field, and are regarded as classics.

Key-to-Address Techniques: a Fundamental Performance Study on Large Existing Formatted Files, by V. Y. Lum, P.S.T. Yuen and M. Dodd, CACM, Vol. 14, No. 4, April 1971, 228-239, investigates randomisation applied to eight large files. Kaimann, in **Structured Information Files**, published by Melville Publishing Corp, 1973, got rather different results in examining a single large file.

A Practitioner's Guide to Addressing Algorithms by D. Severance and R. Duhne, CACM, Vol. 19, No. 6, June 1976, 314-326, looked at the whole field of algorithms once more. The results of these studies differ, and they have been assessed and used in this series to give an overall view of randomisation.

Many of the same references have examined methods of minimising the effect of synonyms once a suitable algorithm has been chosen. Other sources in this area are **Handling Overflows in Direct Files** by Owen Hanson, Proc 8th Australian Computer Conference, Canberra, 1978, Vol. 2, 662-680; **An Indirect Chaining Method for Addressing on Secondary Keys** by L. R. Johnson, CACM, Vol. 14, No. 5, 1961, 218-222; **Improving the Efficiency of Randomly Organised Files by Loading in Access Frequency Order** by Owen Hanson, CUBS Working Paper No 7, available from the CUBS Librarian as above. Between them, these sources will provide the reader with a very full coverage of direct files.

Indexed sequential files

The main sources of information here are: **File Organisation and Evaluation Modelling System (FOREM)** by V. Y. Lum and P. J. Owens. See Information Systems, Coins IV, Plenum, New York, 377-387 and earlier references.

They describe optimisation techniques.

Quantitative File Evaluation and Design, by A. Y. Montgomery and D. Hubbard, Proc. 8th Australian Computer Conference, Canberra, 1978, Vol. 3, 1242-1266. This paper, and earlier work by the authors, compares IBM and ICL 1900 series software.

Modelling of Indexed Sequential Files: Monitoring Disc Transfers by Eva Huzan, Computer Journal, Vol. 22, No. 1, Feb. 1979, analyses the operation of ICL 1900 series software in detail.

The Hidden Speed of ISAM by F. T. Coyle, Datamation, June 15, 1971, 48-49, describes how to optimise ISAM files.

Choice between file organisations

Choosing Between Sequentially and Indexed Sequentially Organised Files for Sequential Processing by Owen Hanson, Proc. 6th NZ Computer Conference, Auckland, Aug., 1978, Vol. 2, 136-155.

Entry to the File: Randomise or Index by R. A. Kaimann, Data Processing Magazine, Part I 1966 Vol. 8, No. 12, 18-21. Part II 1968, Vol. 10, No. 12, 24-27.

Direct or Indexed Sequential — a File Designer's Guide by Owen Hanson, Proc. 6th NZ Computer Conference, Auckland 1978, Vol. 1, 517-533.

Indexed Sequential v Random by G. M. Nijssen, IAG Journal, Vol. 4, No. 1, 1971, 27-37. This paper concentrates on batch updating of the two types of file; the others cover a wider field.

Database systems

There are many references in this area and a number of books are suitable as sources. Three of the most useful are:

Fundamentals of Database Systems by Deen, published by Macmillan.

Computer Database Organisation, and **Principles of Database Management** both by James Martin, published by Prentice-Hall. Specific areas of interest are covered in **Practical Aspects of Database Systems** by Norman Revell, Proc. ICCA Conference, Bangkok, 1977, and **The Impact of Implementing Database Systems in Organisations**, by Jamil Sherif and Owen Hanson, 8th Australian Computer Conference, Canberra, 1978, Vol. 4, 1612-1626.

Online systems

The most comprehensive reference here is **Design of Real-Time Computer Systems** by James Martin, published by Prentice-Hall. Other points are made in **Parallel Programming** by Tom Gilb, Datamation, Oct. 1974, and **A Survey of Security of Online Systems in the UK** by Norman Revell, Proc. ADV Kongress, Vienna, 1978, 397-401.

Security

A very useful general reference, giving a wide coverage at an advanced level, is **Keeping Computers Under Control** edited by Andrew Chambers and Owen Hanson, published by Gee and Co. The papers that make up the book reference most of the major courses for further study.

It should be emphasised once more that most readers will not require the great bulk of these references, since the series provides a complete coverage of file design for the DP professional.

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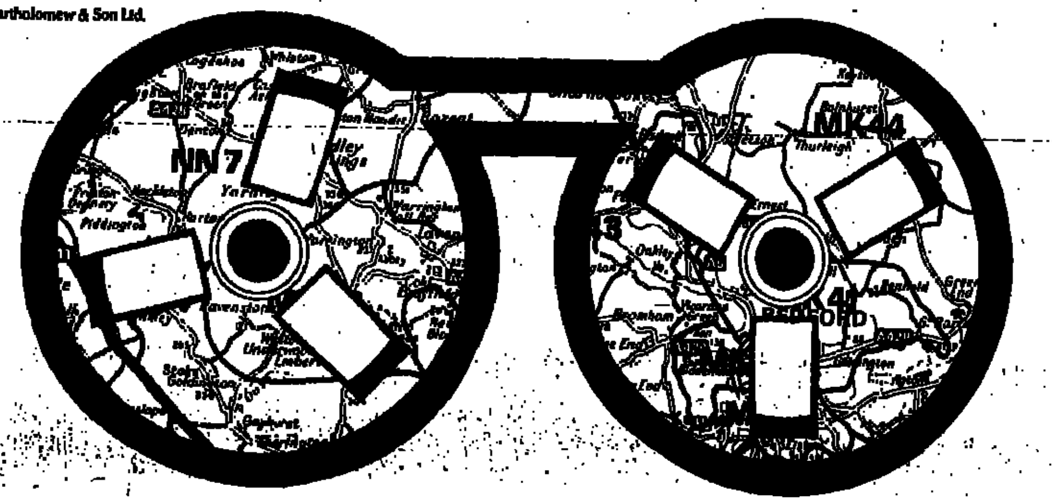

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Synopses should be submitted to the IEE Conference Dept., Savoy Place, London WC2R 0BL, by November 3, and further details can be obtained from the same address.

30th ANNIVERSARY

To mark the 30th anniversary of the publication of Turing's paper Computing Machinery and Intelligence, the IEEE Transactions on Pattern Analysis and Machine Intelligence will publish a special issue entitled Computer Intelligence: Three Decades. Judith M. S. Prewitt will be guest editor and papers on all aspects of machine/artificial intelligence are invited.

Contributed papers are due on January 1, 1981 and the special issue will be published in November of that year. Notification of intent to submit a paper, with a tentative title, should be given as soon as possible to Dr Judith M. S. Prewitt, Division of Computer Research and Technology, National Institutes of Health, Bethesda, MD 20205, USA.

IFIP CONFERENCE

The IFIP Conference on Computer Hardware Description Languages and their Applications will take place from August 31-September 3, 1981. It will be held at Kaiserslautern in West Germany, and the conference language will be English. The organisers are the IFIP Technical Committee TC 10 and its working group WG 10.2, and Kaiserslautern University, with the collaboration of IEEE, ACM, Gesellschaft für Informatik und Nachrichtentechnische Gesellschaft.

Last date for receiving five copies of full-length papers is January 31, 1981. They should be sent to the Program Chairman, Professor Melvin A. Breuer, Electrical Engineering Dept, Powell Hall 312, University of Southern California, Los Angeles, California 90007.

COMPANY NEWS

Reshuffle at the top in CDC

Price

THE succession to William Norris, founder and guiding light at Control Data Corp since its formation in 1957, has been secured with the appointment of Robert Price, head of the computer division, to the post of president and chief operating officer.

Norbert Berg becomes deputy chairman, and William Norris remains chairman and chief executive. The trio will come together in a new corporate executive until Norris decides to retire.

Despite the expectation aroused by the appointments that Price would then become chief executive and Berg chairman, Norris says that there are no commitments to the two officers.

Both men, however, reflect the personal Norris commitment to social programmes: Price is credited with having turned the large computer business around so that people no longer talk about Control Data dropping out of the mainframe business, while Berg has been responsible for much of Control Data's admirable social work, such as employing ex-convicts and siting plants in run-down inner city areas.

Earlier this year, the company announced plans to invest $8 million in the run-down West Parkside district of Philadelphia, either renovating an existing building or starting anew. The centre would include all the facilities that small businesses need but cannot normally afford, including training and management assistance as well as things like copiers and telex links. Control Data will run it, offering tenancies to small companies with a rent including all the ancillary services. Other centres are being established in Minneapolis, St Paul and Toledo (CW, January 10).

Second quarter figures from the company show net profit up 3.7% at $39 million on turnover up 22.3% at $943 million. The figures show the benefit to Control Data of owning a financial services company, Commercial Credit. In recent quarters, Commercial Credit has performed poorly and computers have made all the running.

But this time, computer profits were up a mere $100,000, the rest of the profit advance coming from Commercial Credit.

Recession hits Burroughs, misses IBM

FOLLOWING three very poor quarters by its own high standards, IBM is back on course, but Burroughs shocked Wall Street with a 12% profit fall in the second quarter, its first since 1963.

After blotting its copybook with net profit slightly down in 1979 over 1978, IBM has resumed its onward march in the first six months of 1980, with profit gain in the second quarter back to 1978 levels at 14%.

For the six months, net profit rose a more modest 8.2% to $1,445 million on turnover up 12% at $11,929 million. In the second quarter, net profit was $763.8 million — 14% up — on turnover which advanced 15% to $6,180 million.

IBM has been manipulating its prices to encourage outright purchase, and the adjustments are paying off. Outright sales in the second quarter were 15% above those for the first quarter at $2,450 million, while rentals and services income was up a mere 3.4% at $3,740 million. The figures actually reflect a sharp dip in the rate of purchase in the first quarter of 1980, because comparison with the second quarter of 1979 shows sales up 17% but rental and services also up 15%.

Pre-tax margins remain under pressure, with the second quarter figure standing at 19.6%, up half a point over the first quarter, but down from 21.2% in the second quarter.

At Burroughs, the picture is in sharp contrast to that at IBM, with production and scheduling problems causing a 12% pre-tax profit slump to $60.9 million on turnover up a modest 7% to $735.2 million.

Specifically, the company says that problems with the Burroughs Modular Terminal series and the new 900 family of machines were behind the profit slide. Component shortages, delays in manufacturing training programmes and strikes at plants in Detroit all contributed to what a "source close to the company" estimates as lost sales of over $30 million in the quarter.

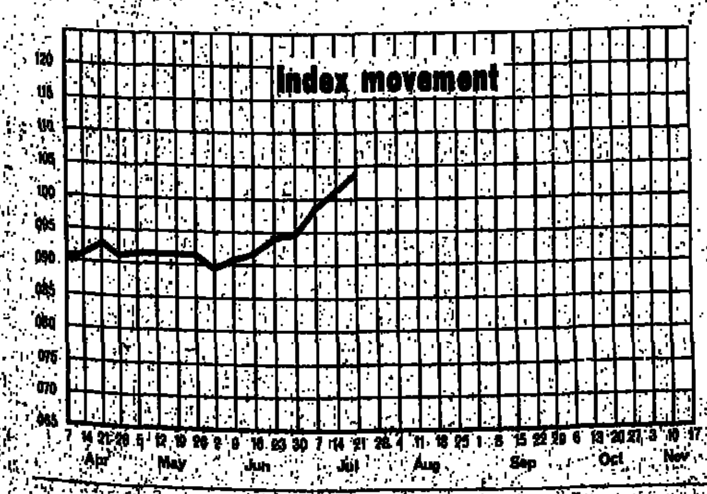
Burroughs is not forecasting immediate improvement, but expects to report an overall profit rise for 1980 as a whole.

CW SHARES TABLE

Date: 18/7/80 Index: 103.98 Change: +2.34

Pence 1980 High	Low	London Stock Exchange Stock	Pence Price	C'nge	$ 1980 High	Low	New York Stock Exchange Stock	$ Price	C'nge
410	230	A Comp Tech (25p)	410	–	18⅞	14¼	AM International	18¾	– ⅛
43	29	B Bev Kent (25p)	29	–	27⅞	17¼	Ampex	24	+ ¾
£37	£28½	Burroughs ($5)	£27	–£ ½	44½	33¼	Automatic Data Proc	44½	+ 3⅝
78	43	Chloride (25p)	48	– 4	84	63⅞	Burroughs	68¼	+ 1¼
120	94	Chubb (20p)	113	– 2	28⅛	16⅞	Computer Sciences	28⅛	+ 2¼
100	84	Cole (R H.) (25p)	88	–	63	45	Control Data	63	+ ⅞
935	540	De La Rue (25p)	835	+45	78½	59½	Digital Equipment	78½	+ 6½
180	148	Exel (25p)	170	+ 8	40¼	28⅝	Harris	40¼	+ 1½
864	407	Ferranti (50p)	864	+29	73½	53¼	Hewlett-Packard	73½	+ 6⅛
488	336	GEC (25p)	488	+44	97⅞	66¼	Honeywell	91⅛	+ 6⅛
£43¼	£30⅛	Honeywell ($1.50)	£38	+£2⅝	80½	55⅛	Intel	80½	+ 6
£31	£23	IBM ($1.25)	£27½	+£1⅛	66⅞	51⅛	IBM	65⅞	+ 2⅛
174	116	ICL (25p)	174	+ 6	18⅞	11½	Memorex	14¾	– ½
81	64	Kalamazoo (10p)	78	– 3	61⅞	42¼	Motorola	56⅛	+ 3⅛
245	203	Kode Inter (25p)	245	+ 2	28⅞	17⅛	National Semi	28⅞	+ 1¾
£28¾	£20⅛	Motorola ($3)	£22¾	+£ ⅞	78⅜	53¼	NCR	71½	+ 7⅜
270	102	Muirhead (25p)	108	– 8	52⅞	37	Perkin-Elmer	52⅞	+ 2⅞
£111	£76	NCR 4% 93/98	£98	+£16	30½	26	Rockwell Inter	28¾	+ 1⅛
£171	£126	Perkin-Elmer 4%	£171	+£8	126⅝	85	Schlumberger	126⅝	+ 7⅜
470	378	Philips Lamp (Fl 10)	397	+ 1	57⅞	42¾	Sperry Corp	55⅛	+ 4¼
223	198	Plessey (50p)	223	+14	17	13⅞	Storage Tech.	17	+ 2¼
298	190	Racal Elect (25p)	288	+14	54½	29⅜	Tandy	54½	+ 8
82	65	Rediffusion (25p)	80	– 2	63½	43⅞	Tektronix	60½	+ 1¼
£13½	£10⅝	Rockwell ($1)	£12½	+£ ¾	104	85⅛	Texas Instruments	100¼	+ 1½
£56⅛	£40⅞	Schlumberger ($1)	£52¼	+£3¼	47	38	TRW	44¼	+ 4¼
£28⅛	£19¼	Sperry Corp ($0.50)	£23⅛	+£1⅜	9⅛	5¾	Wyly	9⅛	+ ¾
£21	£16½	TRW Inc ($1.25)	£18½	+£1⅛	65½	50⅛	Xerox	63¼	+ 2¼
324	267	Thorn-EMI (25p)	324	+10					
£29⅛	£21⅝	Xerox ($1)	£26⅝	+£1⅛					

The table shows the closing prices in London and New York at the end of last week. The share index is based on the prices of the UK companies in the table.



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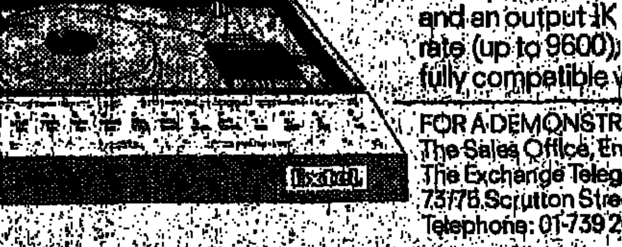

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To apply for any of these positions, please telephone Brian Harris or Karen Rizzello on 01-242 9356.

(2064)

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D.P. on Microcomputers

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Closing date for receipt of applications 8th August 1980.

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SENIOR PROGRAMMER (SOFTWARE)
Principal Administrative Assistant Grade
£6258 p.a. - £7685 p.a.

Applications are invited for this post which is available in the Regional Computer Unit's Technical Services Section. This Section is responsible for all systems software, communications, programming standards and other areas requiring special technical knowledge and ability. The software Programmer will generally be responsible for one of the major operating systems used but will be expected to have or develop technical skills in other areas.

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The Recruitment Officer
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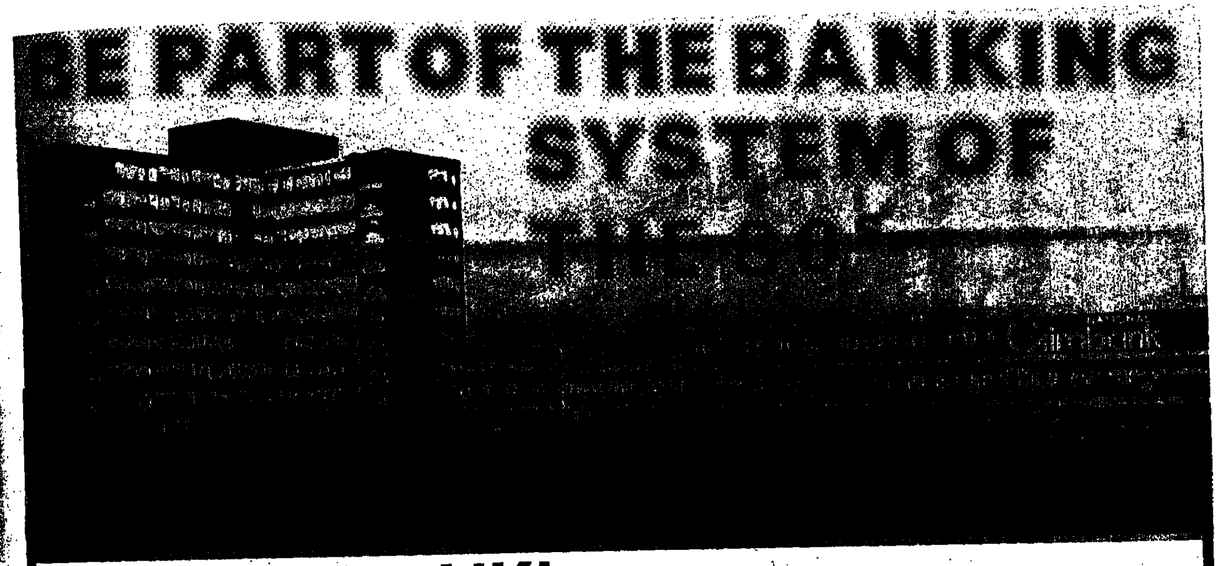
Oxford Regional Health Authority



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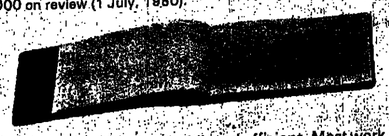

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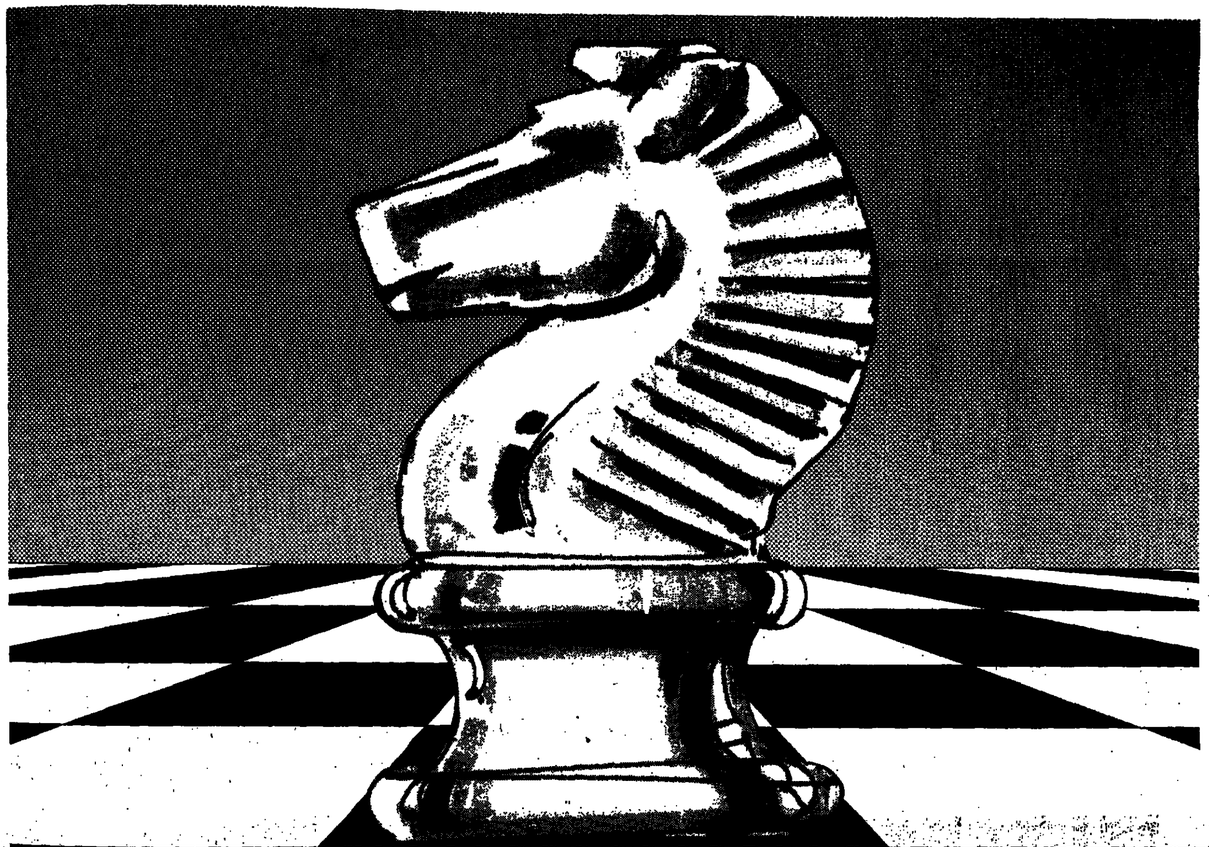
75-76 Little Britain, London EC1A 7EY



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(2099)

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(2050)

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North West c. £8,000

A major division of a large engineering organisation is seeking a Systems Specialist with the potential for management. His initial responsibilities will involve definition and implementation of manufacturing and administrative systems possibly using IBM's COPICS package.

Applicants aged 28-35 should have a good education and a sound computing background involving systems design and development within the engineering industry.

This is an excellent opportunity for an aspiring professional to achieve management status in a dynamic environment.

Analyst/Programmer

West Midlands £7,500

Our client, is an acknowledged leader in its field and produces a wide range of high and low technology products. The Systems Development team now has a vacancy for an Analyst/Programmer to assist in the development of a range of systems involving on-line, real time and database techniques.

Applicants, with at least 2 years computing experience should be proficient with COBOL. Familiarity with a Univac 1100 environment–notably TIP and DMS1100 would be advantageous.

APL Specialist

Warwickshire Neg. to £8,000

A multi-national engineering company requires an APL Specialist to provide technical support in the use of APL. Involvement in the development of software, designed to analyse and produce forecasts from corporate data will also be required.

Applicants should have a good computing background at the programming level and be thoroughly competent with APL on IBM mainframes.

An unusual job with a real technical challenge.

Programmers

Nottingham c. £5,300

A large and diverse organisation has opportunities for PROGRAMMERS with varying levels of experience to develop a variety of commercial applications.

Applicants should have a good education and at least 2 years programming experience using COBOL, PL/1 or Assembler in an IBM 370 installation.

HP 3000 Programming Opportunities

Gloucs. £6,000 – £8,000

A number of positions are available for programmers with from 1 to 4 years COBOL experience to join our client's new team, developing and redesigning their manufacturing and reporting systems on a new HP3000.

Applicants for senior positions, i.e. 3 years +, are expected to possess on-line systems experience and be fluent and effective in spec. writing. A knowledge of structured programming would be a marked advantage and candidates should have good management potential. A relocation package is available for those wishing to move to this beautiful part of the country, plus all the normal large company benefits.

To apply for the above positions or for further information please contact BEV STEVENS.

JAMES BAKER ASSOCIATES, International Personnel Consultants, Gateway House, 50 High Street, Birmingham B4 7SY. Tel: 021-643 7865.

(2093)

DATA RESOURCES

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ANALYSTS	£	No. of vacancies
(DR/1685) 12+ mths commercial	6750	5
(DR/1686) 2+ years financial	7000	5
(DR/1687) 3+ yrs commercial	7500	5
(DR/1688) 4+ years (seniors)	8000	5
PROGRAMMERS		
(DR/1689) 18+ months COBOL	6250	9
(DR/1690) 2+ years COBOL	6600	8
(DR/1691) 3+ years COBOL	7000	8
(DR/1692) 4+ yrs (seniors) COBOL	7500	5

Contact Susan Stuart

Coventry

ANALYSTS	£	No. of vacancies
(DR/1693) 2+ yrs m'facturing IBM	7250	3
(DR/1694) 3+ years commercial database	7800	2
PROGRAMMERS		
(DR/1695) 2+ years COBOL	6500	2
(DR/1696) 3+ yrs (seniors) COBOL	7000	2

Contact Susan Stuart

Leicestershire

ANALYSTS	£	No. of vacancies
(DR/1697) 18+ mths commercial IBM	6500	5
(DR/1698) 2+ yrs manufacturing	7000	5
(DR/1699) 3+ years financial	7500	3
PROGRAMMERS		
(DR/1700) 12+ months COBOL	5500	4
(DR/1701) 2+ years COBOL	6250	3
(DR/1702) 3+ years COBOL	6500	2

Contact Susan Stuart

Nottinghamshire

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(DR/1703) 2+ years financial	6400	2
(DR/1704) 4+ years (seniors)	7500	5
PROGRAMMERS		
(DR/1705) 2+ years COBOL	6300	4
(DR/1706) 3+ yrs (seniors) COBOL	7250	5

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Staffordshire

ANALYSTS	£	No. of vacancies
(DR/1707) 2+ years commercial	6600	3
(DR/1708) 4+ years (seniors)	8000	2
PROGRAMMERS		
(DR/1709) 18+ months PL/1	6500	2
(DR/1710) 2+ years COBOL	6500	5
(DR/1711) 4+ yrs (seniors) COBOL	7300	2

Contact Susan Stuart

Greater Manchester

ANALYSTS	£	No. of vacancies
(DR/1712) 12+ mths commercial	6000	5
(DR/1713) 2+ yrs manufacturing	7000	5
(DR/1714) 3+ years financial	7500	4
(DR/1715) 4+ years (seniors)	8000	2
PROGRAMMERS		
(DR/1716) 12+ months COBOL	5500	4
(DR/1717) 2+ years COBOL	6500	5
(DR/1718) 3+ years COBOL	7000	4
(DR/1719) 4+ yrs (seniors) COBOL	7500	3

Contact Cathy Scott

Merseyside

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(DR/1720) 12+ mths commercial	6000	6
(DR/1721) 2+ years production	6700	4
(DR/1722) 3+ years financial	7200	5
(DR/1723) 4+ years (seniors)	8250	3
PROGRAMMERS		
(DR/1724) 18+ months COBOL	6500	6
(DR/1725) 18+ months IBM ASSEMBLER	7000	3
(DR/1726) 3+ years COBOL	7250	6
(DR/1727) 4+ yrs (seniors) COBOL	7800	4

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Lancashire

ANALYSTS	£	No. of vacancies
(DR/1728) 12+ mths commercial	6000	2
(DR/1729) 18+ months financial	6500	4
(DR/1730) 2+ years manufacturing	7000	4
(DR/1731) 3+ years commercial	8000	4
PROGRAMMERS		
(DR/1732) 12+ months COBOL	5500	3
(DR/1733) 18+ months COBOL	6250	5
(DR/1734) 2+ years COBOL	6700	5
(DR/1735) 3+ years COBOL	7200	5

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Yorkshire

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(DR/1736) 12+ months financial	6500	6
(DR/1737) 18+ months retail	6800	5
(DR/1738) 2+ years stock control	7250	5
(DR/1739) 3+ years commercial	7750	4
PROGRAMMERS		
(DR/1740) 12+ months RPGII	5500	2
(DR/1741) 18+ months COBOL	6250	6
(DR/1742) 3+ years COBOL	6800	6
(DR/1743) 4+ yrs (seniors) COBOL	7200	5

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Humberside

ANALYSTS	£	No. of vacancies
(DR/1744) 2+ years manufacturing	6750	2
(DR/1745) 3+ years commercial	7500	2
PROGRAMMERS		
(DR/1746) 18+ months IBM ASSEMBLER	6500	2
(DR/1747) 3+ years COBOL	7000	2

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Cambridgeshire

ANALYSTS	£	No. of vacancies
(DR/1748) 12+ mths financial	6500	2
(DR/1749) 3+ yrs commercial IBM	8500	2
PROGRAMMERS		
(DR/1750) 12+ months PL/1	6250	2
(DR/1751) 2+ years COBOL	6500	3
(DR/1752) 3+ years systems programmers IBM	7000	2

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OPPORTUNITIES IN HOLLAND

Go Dutch...for the really good life!

by Val Halliwell

IT'S a good life in Holland — and it can be really good, says Val Halliwell, managing director of Victoria Appointments, the Manchester-based computer personnel recruitment company.

Holland, says Miss Halliwell, has the rich chandeliered tradition of the country's 17th Century Golden Age, side by side with buildings to rival the best in modern architecture and facilities, displaying wealth, prosperity and progress at every turn.

Dutch DP installations work to high standards, and she reports that working environments are thoughtfully designed, affording a pleasant working atmosphere.

PEOPLE who choose or are sent by their company to live and work abroad, find that their new surroundings take some time getting used to. However, the Dutch are used to meeting foreigners, and most of them know one or more foreign language, especially English.

The influx of overseas business to Holland has brought many people from abroad to live there. By and large they have settled down quite happily, and much has been done to make them and their families feel at home.

It is worth looking into the background of the country so as to be a little wiser before going into those lucrative jobs. Holland, otherwise known as the Netherlands, is a small country, but with a population of over 14 million. The population density is the highest in the world. About 6,500,000 people live in Randstad Holland — the western part of the country, where three main cities are situated: Amsterdam, the capital, a seaport and international financial centre; Rotterdam, the largest port in the world (Europort and Maasvlakte); and The Hague, the seat of the government and the International Court. The Randstad also takes in Hilversum, Haarlam, Leyden, Delft, Gouda and Utrecht, forming one vast tract of urban concentration.

One of the most important aspects to the would-be worker in Holland from Britain is that it is part of the EEC, so there is no difficulty with work or residency permits.

The economy since the end of the Second World War has been characterised by more or less continuous expansion. In the period 1958-1971 alone, real national income doubled. Economic policy aims to produce goods in such volume and of such quality that exports, with revenue from service industries and capital transactions, can balance imports.

The main industries are metal manufacturing, electrical, electronic, mechanical and aeronautical engineering, non-ferrous metals, food, drink, tobacco, oil and chemicals. Data processing personnel can therefore find themselves engaged on just as wide-ranging applications, including production control, order entry, financial and general commercial projects.

In addition, these industries are by and large located in the western part of the country with the attraction of its large ports of Rotterdam and Amsterdam, but the rest of the country has its fair share.

The language is Dutch but English is widely used.

Other aspects to consider are, for example, the health facilities in Holland, which are first class. Education is available in private English speaking schools.

Taxation is a separate issue, and as a prospective full-time employee, should be investigated fully.

Housing in Holland is varied, with new estates developing everywhere which will appeal to permanent employees although, in the main, people prefer to rent accommodation and it is reassuring that rents are controlled. The post and telephone communications are excellent.

Another point is that, being on the mainland of Europe, the rest of Europe (including South of France and sunny Spain) is more easily accessible.

Let us now look at the employment prospects for the would-be DP employee in Holland: There are about 1,600 mainframe installations in the Netherlands with a growing interest in the mini and microprocessor area, although at present the market is largely dominated by IBM, which has a considerable share of the installations.

As in Britain, there is a shortage of skilled DP professionals, the present emphasis being on programmers with fairly general and varied backgrounds, followed by operators.

The DP industry is well represented with software houses, bureaux and manufacturers all vying for business, in addition to a wide range of users. Therefore programmers can expect to be engaged on anything from clearing up backlogs of work caused by staff shortages, conversions to new machines, to development of new software for manufacturers, all of which requires a high level of competence, responsibility and reliability for which British DP technicians are recognised as among the best in the world.

A number of conversions to new ranges now in the pipeline will undoubtedly create great opportunities over the next year or so, in the area of databases and communications, with a growing trend toward distributed processing using mainframes and minis.

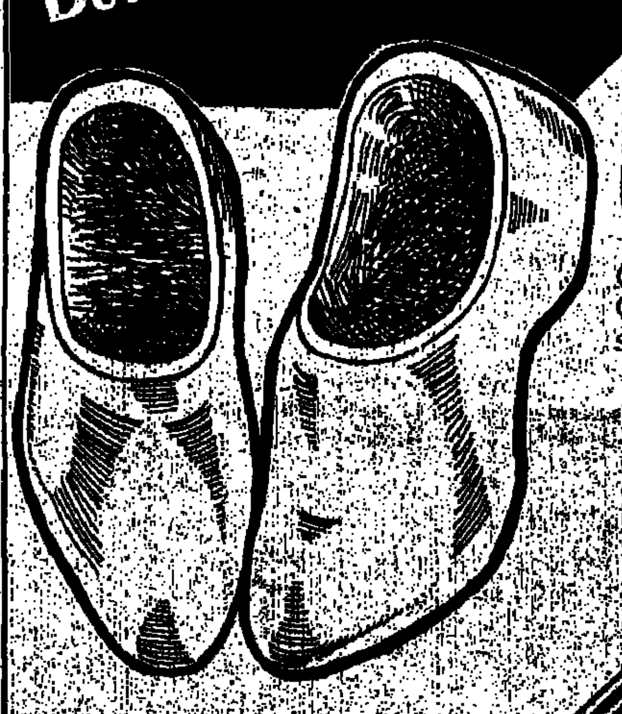
As a general guide, the difference between the market and the UK is that Holland is about six months behind on delivery, so we can look forward to more changes in August-September. This is expected to manifest itself by further increasing the demand for systems programmers, software programmers, application programmers and operators both on a permanent and a freelance basis. Already we are seeing advertisements in the Dutch Press offering such assignments on permanent or temporary (1-2-3-4 year) basis, with full fringe benefits (eg, subsidised housing, medical insurance).

On the whole, installations in Holland work to a very high level of standards and documentation and, in general, DP discipline is high. Working environments are thoughtfully designed, affording a pleasant working atmosphere.

All in all, it's a good life in Holland, and it can be really good!

It has the rich chandeliered tradition of Holland's 17th Century Golden Age side by side with buildings to rival the best in modern architecture and facilities displaying wealth, prosperity and progress at every turn.

Do you fit Quadrant's Dutch requirements?



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Further plus points would be:-

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Career opportunities in Holland

BSO/Automation Technology, a major Dutch software house is looking for professionals with a background in technical, scientific or systems software or hardware to join a growing specialist group. We are looking for people seeking a long-term career in a software and systems house environment rather than a short stay abroad.

We need

Systems designers
to £ 18k
plus car and expenses

Experience in the design of real-time or control systems based on mini or micro computers. 5 years experience in Automation and a BSc or equivalent are minimum requirements. Knowledge of Assembler is essential Experience with any of PDP 11, DG Nova or Philips 800 an advantage.

Analysts
to £ 15k
plus car and expenses

Experience in the development and installation of real-time or control systems based on mini or micro computers. Ability to talk to hardware engineers is important. 3 years experience in Automation and a BSc or equivalent, preferably in computer science or electronics, are minimum requirements. Experience of PDP 11, DG Nova or Philips 800 would be an advantage. Knowledge of Fortran or Basic and Assembler is necessary.

Programmers
to £ 13k
plus car and expenses

Experience in programming real-time and control systems in Assembler for mini or micro computers. Good design and construction are vital. A minimum of 2 years experience and a BSc are required as is programming experience in Assembler. Experience of PDP 11, DG Nova, Philips 800 or Intel 8080 would be an advantage.

Microprocessor development engineer
to £ 15k
plus car and expenses

Experience in the development of microprocessor based industrial products or systems with good knowledge of hardware or interfacing problems. 5 years in computing or electronics, ideally with Intel 8080/8085 or Zilog 80 experience. Knowledge of Assembler and at least one high level language is necessary.

The company offers tax free expenses, assistance with medical insurance and a company car covering private use at no cost to the employee. A relocation allowance up to £ 1500 depending on family status plus transportation to Holland will be provided. Other excellent fringe benefits and almost 5 weeks vacation. Career opportunities to consultant or project management level are available in a growing company. The company is currently busy on a number of different projects using various hardware, including micros.

Applicants to these unique opportunities are requested to send their detailed resumé, preferably with photograph, to BSO/Automation Technology. Interviews are scheduled to be held in the U.K. during August 1980.

Mail to: BSO/Automation Technology b.v.
Postbox 3059
3502 GB UTRECHT
Phone: 010 - 3130946746

BSO/Automation Technology bv
Koningin Wilhelminalaan 5, P.O. Box 3059, 3502 GB Utrecht.
Phone: 010 - 3130946746.
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HOLLAND + MUCH MORE

Although our offices are based in Holland we handle Contracts throughout the Continent.
The only European country we don't work in is the U.K.! So if you want to work abroad come to the agency that offers you more.
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HOLLAND	Operator for Honeywell L66, IBM, DOS/OS.
HOLLAND	Systems Programmer Honeywell L66
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GERMANY	Honeywell IDS/TDS Analyst/Programmer
GERMANY	IBM Operator DOS/OS
ITALY	IBM Operators. DOS/OS
FRANCE	10 x CICS Cobol Progs. Some French nec.
FRANCE	Total Systems Progs. Some French
FRANCE	Prime Project Leader. French a must
FRANCE	Prime Progs. French unnecessary
FRANCE	OS SYSTEMS PROGRAMMERS
FRANCE	Systeme 3/15 CCP Prog. Some French
FRANCE	PROGS. RPG/Assembler/Cobol etc. 2 years' plus. With some French. Any machine
FRANCE	CICS Project Leaders. 5 years' + exp. Some French.
FRANCE	DL1 Programmer, Some French
SWITZERLAND	RPG 11 & Progs. Sys 34 Cobol or Germany a plus
SWITZERLAND	PL/1 IMS Programmer. German useful
SWITZERLAND	UNIVAC 1100. Cobol Programmer. German useful

MANY MANY MORE. There's simply not much room to list them. Don't wait until you're available immediately. Register with us now for jobs in the future. Write or Phone (reverse charges).

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Netherlands
HOLLAND 40 441821 (After the 27th July)
(2128)

OPPORTUNITIES IN HOLLAND

OVERSEAS VIA I.A.

Industrial Artists has more challenging and rewarding staff positions on offer. Below are a selection of our most urgent requirements:

ANALYST PROGRAMMERS with at least three years experience of **COBOL** on **IBM 370, 4300** and **303X** Series machines running under **OS/VS1, MVS, DOS/VS** and **DOS/VSE** are required to work at a number of client installations. Good commercial applications experience will be looked for.
Various locations in The Netherlands.

IBM 370-303X COBOL PROGRAMMER with a minimum of four years experience. Must be able to program **UTILISING DL/1 FACILITIES.** The work involves participation in the design and writing of major new systems.
Location: The Netherlands.

4 ICL SYSTEM 10 ASSEMBLER PROGRAMMERS are required to work at client premises in Germany. A good knowledge of commercial applications will be looked for. Training will be given in the use of **"STELLA".** German language not essential, but advantageous.

UNIVAC 90 SERIES COBOL PROGRAMMERS are required, with a good knowledge of commercial systems to work on client premises.
Location: The Netherlands.

SIEMENS BS2000 SERIES SYSTEMS and **APPLICATIONS PROGRAMMERS** are required to work on conversions at various sites in Benelux countries.

ICL 2900 and **1900 PLAN PROGRAMMERS** are required for large systems development and optimization of existing systems. Knowledge of **STANDARD ICL UTILITIES** is essential.
Location: The Netherlands.

IBM SYSTEM 34 ANALYST PROGRAMMERS with **RPG II** are required at a number of different sites in The Netherlands.

TEXAS TI 990 PROGRAMMER with a good knowledge of **COBOL** and **ASSEMBLER.**
Location: The Netherlands.

PDP II RTL/2 CONSULTANT PROGRAMMER to work in a **PROCESS CONTROL** environment. Work involves water purification and pumping stations. Knowledge of German advantageous, but not essential.
Location: The Netherlands and Switzerland.

4/5 IDMS/COBOL PROGRAMMERS to work on **ICL 2900** Series hardware are required to provide 'in house' team support on the development of new systems, plus maintenance of existing systems. Applications will include Payroll, Stock Control and Financial Ledgers.
Location: Abu Dhabi
An exceptional benefits package is provided including accommodation, etc.

SYSTEMS PROGRAMMER required to implement a **DL/1** database, also to create and develop systems software. Hardware **IBM 4300** Series; operating system **DOS/VSE.**
Location: The Netherlands.

SYSTEMS PROGRAMMER required to join our client's own permanent staff, initial task will be to interface **DATA 100** and **SYCOR** terminals to an **IBM** mainframe. Knowledge of Dutch language essential.
Location: The Netherlands.

UNIVAC V77 COBOL PROGRAMMERS with a knowledge of **VORTEX** package are required to work on a variety of commercial applications.
Location: The Netherlands.

UNIVAC 11/80 SYSTEMS PROGRAMMER required with a good knowledge of **1100 Series operating systems.**

Excellent salaries are on offer, including generous concessions already negotiated with the Dutch taxation authority, four weeks' paid holiday per annum, paid national holidays and certified sick-time, a holiday bonus, plus the full support of the administrative staffs based in our Dutch offices.

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Marketing and Recruitment Director,
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21 Bancroft, Hitchin,
Herts SG5 1JW.
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OPPORTUNITIES IN HOLLAND

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HOLLAND

Systems Programmer IMS DB/DC

Contact: M. Doherty on

01-439 1856

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International company based in West Germany requires software and hardware engineers to develop computer-based visual-communication and digital telephone systems. Vacancies exist at all levels up to group leader for applicants qualified to degree or equivalent.

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(2150)

Systems Analysts Programmers+ Operators

Contract work – the North

We are currently in the process of interviewing men and women with good Systems Analysis, programming or operating experience who wish to be considered for contract work in the North.

Those interested in being considered should write or telephone Mrs Maureen Ingle or John Kilvington,

Maureen Ingle, Minerva Computer Personnel (Recruitment Consultants) Fountain House, 81 Fountain Street, Manchester, M1 1PW. Tel: 061-236 7036

John Kilvington, Minerva Computer Personnel, (Recruitment Consultants) Minerva House, East Parade, Leeds, LS1 5RX. Tel: 0532-448665

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Candidates should have around four years' relevant experience and a good educational background for the post which is based at 27 Park Circus, Glasgow.

Application form and job description may be obtained from the Personnel Officer, Greater Glasgow Health Board, 351 Sauchiehall Street, Glasgow G2 3HT, to whom completed forms should be returned not later than Monday, August 11, 1980.

(2147)

IMS DB/DC PROJECT

Holland £20,000 + p.a.

We are seeking an experienced analyst programmer to work in the Netherlands on the development of a large online inventory control system. The broad functional system specification is complete and the task will be to produce the detailed specifications for a major subsystem and then undertake development, testing and implementation. (The later phase will include writing some of the major programs and supervising a small team of programmers.) Applicants should therefore have previous experience of developing online systems coupled with a good knowledge of Cobol and IMS DB/DC or DL/1. The project duration will be 2 years and employment will be on a one year renewable contract basis with our associate company in Switzerland.

For further details please telephone or write to Brian Blisson at our UK office, or call during evenings/weekends on 03446 6…

CDS The European 370 Specialists
67-73 Park Street, Camberley, Surrey GU15 3PE. Tel: 0276 28441. Telex 858…

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Covering Benelux from its Amsterdam office, this subsidiary of the UK computer software house offers a unique method of working, mainly from a home base, to DP professionals with at least four years experience in the industry.

For further information please contact:

Mrs. Penny Tutt,
Director, F International BV

F International BV
Herengracht 768
1017 CA Amsterdam
Holland
Tel. (020) 27 90 51

F International Limited
The Bury
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COBOL PROGRAMMER	Crawley
ANAL/PROG. (PL1)	Redhill
CHIEF PROGRAMMER	City
SYSTEMS ANALYSTS	City
SYSTEMS PROGRAMMER (CICS)	Dagenham
ANAL/PROG. (COBOL)	Hayes
ANAL/PROG. (COBOL)	S.W.1.
SYSTEMS ANALYST	Brentford
PROGS. + ANALYSTS	S.E.1

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EMS currently have a number of interesting vacancies for proven performers, with a small but technically experienced unit supporting a growing network of clients throughout the U.K. The centre's primary product is the Honeywell Level 6 series, for which we have proven integrated systems available for most applications, offering unique marketing advantages. Without doubt, the range of field tested products now available with EMS are beyond the investment capability of all but the leading manufacturers.

Our requirement now is for professional, experienced salesman capable of rapidly penetrating defined markets with available products starting from £20,000 upwards for basic Turnkey systems. Experience of selling to Stockists, Distributors, Manufacturers, Car Leasing and Sales organisations and general commerce is required. Equally we have a need for senior level staff capable of taking territory control and eventually moving towards controlling entire regional teams.

We seek only experienced salesmen capable of selling a minimum of £200,000 worth of systems to a vast potential U.K. market. Our modularised software is currently in process of being converted to other leading manufacturers new systems offering to enhance our market opportunities during the 1980s. Ability to sell sophisticated products under franchise to other Turnkey Groups or Software Houses would also be of interest. Attractive salaries and commission schemes are available for top salesmen.

Consultant: John Wood—0782 623665.

Project Managers Birmingham

£8,000 upwards + car

We need experienced man managers with good system design capability to join an expanding Turnkey Group based at our Birmingham Data Centre. Ability to co-ordinate team activities and to handle multiple systems shipments, using existing modularised software to reduce development time work content will be desirable.

The major emphasis during the 1980's will be that of rapid shipments from initial contracts, and staged enhancement to existing software with odd custom-built systems working within a fixed price environment. We are already looking at the introduction of structured programming and many other production aids. Ability to function as a Business Analyst and assist with tender preparations will be advantageous.

All candidates must have undertaken at least 2 years' Cobol programming at some stage during their career. We seek applicants aged from 27 upwards prepared to work in a demanding environment and control teams of up to 8 staff. Travel to client sites is an important function so a driving licence is essential. We offer a modern, informal working environment where promotion based upon results is ensured for all group staff.

Consultant: John Wood—0782 623665.

ICL Systems Designers/Analysts — North Staffs

Good Negotiable Salaries

We urgently seek experienced ICL 2903/4 Systems Designers and Analysts capable of taking design responsibilities for a small software team taking on customised development for a growing range of ICL clients throughout the Midlands and North who are regularly returning for repeat business. All applicants must have a sound working knowledge of 1900s or the 2903 systems and be capable of making an early contribution towards the units development. Current clients include Manufacturers, Electrical Groups, Printing Groups, the Potter Industry and Food Groups. We have our own in-house 2904 with 2 x 7502s and a variety of videos.

A good pre-sales personality is essential as regular client contact is involved. We seek a neat and orderly working manner to ensure adherence to group standards. Ability to project forecast and plan is important as most of our work is based upon fixed price quotes, necessitating tight and meaningful controls.

The ICL unit is located in a small informal administration centre in Newcastle-under-Lyme with easy access to most Midlands and Northern centres. An excellent client relationship already exists for the unit and needs individuals capable of enhancing still further our growing relationship. Attractive salaries and fringe benefits can be available depending upon the level of experience and ability offered. Salary will not be an obstacle for the right candidates.

Consultant: Don Walkiate—0782 623665.

Senior Software Designers & Progs. — Hants, London, Cheshire

Up to £11,000

A major U.K. software group are currently seeking a large number of additional staff to work on a variety of different projects within group development centres. Examples of projects involved are as follows

1. Initial designs of major command projects for the Police requiring Cobol and Algol knowledge using Burroughs hardware. A knowledge of MCP/GEMCOS/NDL/DMS-11 would be advantageous
2. Military and Communications projects requiring a knowledge of PDP-11, DG Nova, Ferranti, GEC and Coral 66. Alternatively Assembler on Minis would be advantageous
3. Programmers are required to work on pension systems for a major assurance company run on a large IBM mainframe. The applications make extensive use of database and transaction processing

Numerous other vacancies exist throughout the U.K. Graduates are preferred.

Contact: Carol Atrak — 0782 623665.

Analysts & Progs—Burroughs — London

Negotiable salaries

A client dealing with Banking and Foreign Exchange Systems seeks a number of staff with Burroughs B1700 or 1800 Cobol experience in a commercial environment. Any package experience would be useful, as would be the ability to communicate with external software consultants developing systems on the client's behalf. Numerous positions are available for staff with relevant experience. Attractive salaries are negotiable.

Contact: Carol Atrak—0782 623665.

ICL Analysts & Progs. — Hull

£6,500 to £12,000

A large ICL user, currently developing under George 2 and DME-2, has a number of urgent requirements for experienced ICL staff. Candidates must be educated to a minimum A-level and have an ICL Cobol or Fortran programming background. On-line systems experience would be particularly attractive. The client is a well-known and highly successful trading group dealing with U.K. wide systems. Candidates will join a small team of approximately 12 mixed Analysts and Programmers, working on the development of financial and commercial systems. At Hull staff also get involved with the development of custom-built production systems and additional technical projects. Opportunities exist equally for later moves into management.

Consultant: John Wood—0782 623665.

Progs. & Analysts—Banking Systems — Manchester/Cheshire

to £9,000

We currently have a large number of vacancies for experienced commercial Analysts and Cobol Progs. to work on major banking systems involving both IBM and Univac hardware. Any on-line experience would be particularly advantageous. Hardware retraining will be supplied where appropriate. Early interviews are available for all candidates of interest. Please apply urgently for application form. Excellent opportunities currently exist.

Contact: Carol Atrak—0782 623665.

Systems Analysts — Commercial Systems — North West

c £9,000 packages

We have a number of vacancies within our systems consulting unit for experienced Analysts to join our client support teams building large and complex applications systems under the control and direction of client staff. Candidates with Stock, Accounting and Distribution experience are particularly relevant. Ideally you will be a car owner, aged minimum 25, have at least 3 years' systems experience with a previous 1/2 years' Cobol programming background, and be capable of working with a minimum of management supervision.

All candidates should currently be earning at least £6,000. EMS are prepared to pay attractive salaries and tax free travelling expenses. We offer varied work assignments on long-term contracts, and excellent earnings prospects. Scope also exists for travel, or appointments within other divisions of the group. Phone urgently for an application form.

Contact: Colin Phillips—0782 623665.

IBM Systems Engineers — London

Ref. 015 013400 — £9,000 to £10,000

Our clients are seeking a unique combination of skills and will pay attractive salaries to attract the right candidates. Experience of IBM 370's or 434's, Assembler, DOS/VS VM and CICS will be essential. The systems engineer will assist in the planning and developing of specialised software with the real time intercom system. You will be a Technical Specialist who will design and generate software and carry out some programming. Duties will include the generation and maintenance of teleprocessing monitor, and associated software. You will evaluate suppliers' software for the in-house, realtime system recommending enhancements where appropriate. You should have a minimum 5 years' IBM Assembler, and at least 2 years' CICS. Some experience of structured programming would be advantageous and good standards experience will be important to ensure accurate working within a disciplined environment. The client is a major IBM user dealing in commodities within the City.

Contact: Carol Atrak—0782 623665.

IBM Project Controllers and Programming Controllers — Merseyside

Ref. 002 1109AO — c £7,800

Candidates should be capable of project planning and project controllers. Project Controllers will control analysts and design functions taking projects, with regular user contact, from initial conception through to final installation. Education to graduate level is preferable.

Programming Controllers will be experienced in IBM ANSI Cobol and Assembler, and have proven ability to plan and manage large work loads. Experience of DL/1 or IMS is essential. Any experience of minis or Distributed Processing would be particularly attractive.

The client is a subsidiary of a major U.K. engineering group, with its own computer centre connected through to a dual IBM 3033 in the Midlands. Most applications are either existent or in stages of development.

Contact: Carol Atrak—0782 623665.

Software Designers & Systems Programmers — Middlesex

to 9K

Our clients, a major Space and Defence Systems Manufacturer, have over 50 current vacancies for experienced development staff to work on real-time and software systems. Positions include Systems Engineers, Diagnostics Engineers and Programmers. Any experience of CORAL would be particularly attractive. We currently seek applications from staff who have worked in an Aeronautics, Defence or Space environment who are seeking the opportunity of joining a progressive British Group. Relocation assistance will be provided.

Contact: Carol Atrak—0782 623665.

Project Managers Birmingham

£8,000 upwards + car

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Consultant: John Wood—0782 623665.

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Assembler OS Progs.—Kent—6-12 months.
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IBM DOS Cobol—CICS Progs—Berks.—9 months.
Honeywell IDS/TDS Progs.—Cobol—London or Home Counties—6-12 months.
ICL New Range Analyst & Progs.—Cobol VME—London or H. Counties—6-18 months.

Midlands
ICL Cobol 1900 Progs.—George III—Crewe, Cheshire—6 months.
PL/1 Progs.—IMS/DB/DC—Birmingham—6-12 months.
DEC Macro 11 RT11—2 Progs.—Birmingham—6-12 months.
Honeywell Level 64 Cobol Progs.—Birmingham—6-12 months.
Honeywell L6 & Series 60—Systems Progs.—Networks—12 months.
IBM Cobol OS/DOS—DL/1 advantageous—various Midlands—6-18 months.

Northern
ICL 1900 Cobol Progs.—Filetab—Manchester—6-12 months.
Honeywell L66 IDS/TDS Cobol Progs.—Liverpool—6-12 months.
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IBM DOS/VS Cobol Progs.—CICS DL/1—Manchester—1-3 years.
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(2130)

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Modular Computer Services is a European leader in the supply of computer systems to the communications and industrial marketplaces.

We are a young dynamic company with a rapidly expanding marketing and sales organisation and as part of this expansion we are looking for Technical Marketing Analysts and Sales Engineers to join our existing teams in Wokingham and Coventry.

Technical Marketing Analysts c £11,000 + Company Car

Suitable candidates will have a technical background on minis and will probably have held senior positions in projects implementing real time systems in industrial or communications applications. The right people will be enthusiastic committed individuals capable of providing our sales force with comprehensive support. This role may suit software specialists with both assembler experience and proficiency in a high level technical language who are looking for the challenge of a demanding pre-sales environment.

Sales Engineers c £16,000 + Company Car

We are looking for Sales Engineers with a proven background of successful selling within a minicomputer environment. They will preferably have a knowledge of communications or process control markets and the kind of drive and determination that will enable them to achieve commission of £6—£8k above targets met. We expect to attract aggressive individuals capable of making a significant contribution to a sales organisation and who are looking to take on increased responsibilities in the future.

Company benefits are excellent and include a non-contributory pension scheme, free Life Assurance and free BUPA.

For further information ring Sue Burden on Wokingham 788711 or write to Modcomp, Molly Millars Lane, Wokingham, Berks.

(2085)

MODCOMP

Sales Engineers

CAD/CAM EUROPEAN & UK AREAS

Marketing

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positions based in South of England

*Earnings Packages commensurate with experience

We are a highly successful Group of Companies, creating, manufacturing and marketing CAD/CAM systems. Our record to date is impressive, our product range innovative and expanding and our export achievements outstanding. (70% of our products are exported).

Expansion, in the U.K. and world markets has opened up a number of opportunities for people with relevant experience and commitment to join a stable, though dynamic Company whose products are exciting, well accepted and strongly supported.

Sales Engineers

At least 2 years sales experience, a competent knowledge of CAD/CAM and the ability to identify applications is essential. Your negotiation skills should be well developed as must your ability to deal with people at all levels, understanding the effect of computerisation upon their companies and departments. For the EUROPEAN position fluency in French or German would be preferable. The earnings potential is good, as is the prospect of advancement.

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To enhance our penetration we wish to identify market support and market research people. The SUPPORT position offers the chosen applicant the opportunity to carry out a pure marketing role from the product inception through to launch. We are introducing a new product in 1981 and such a person is of vital importance. Knowledge of CAD/CAM would be advantageous as would knowledge of the electronics industry. The MARKET RESEARCH opportunity is open to people who have recently graduated and have a strong electronics or technical background where they will be responsible for collating information prior to dissemination. The successful applicants will be working with a number of people within the sales division and so it is imperative that they have the ability to communicate effectively in a fast moving and challenging environment.

All the positions offer genuine opportunities for advancement within the Company's diverse structure.

For an immediate and confidential interview contact our Advising Consultant, Simon Lever,
On01-935 0671 (24 hour answering service)
Or 021-420 1574 (evenings and weekends)
Your application will be treated in total confidence.
If you wish please write to me.

SCR Specialist Computer Recruitment Ltd

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The various roles include programming, principally in PL/I and COBOL, systems design, project management and consultancy, working with experienced colleagues, and provide opportunities for personal advancement.

Experience of CICS, DL/I, IMS, DMS or COBICS would be of particular interest, but is not essential.

The company has a friendly personal approach to clients and staff alike, and has generated an active social life. Benefits such as six monthly salary reviews and bonus, pension and sickness schemes, 5 weeks holiday, motoring allowance and expenses are attractive.

If you can offer IBM experience, and would like a confidential discussion, contact Mike Hassian ref CW 280.

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(2095)

POLYTECHNIC OF THE SOUTH BANK
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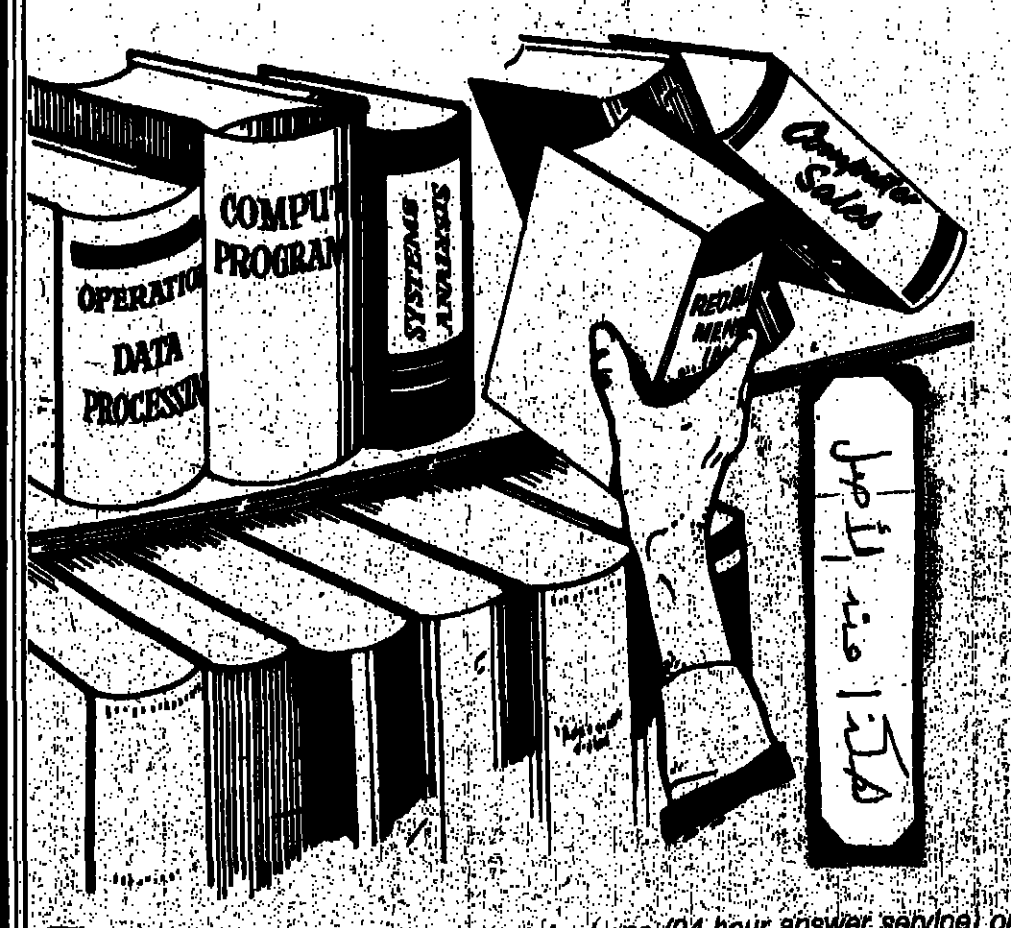

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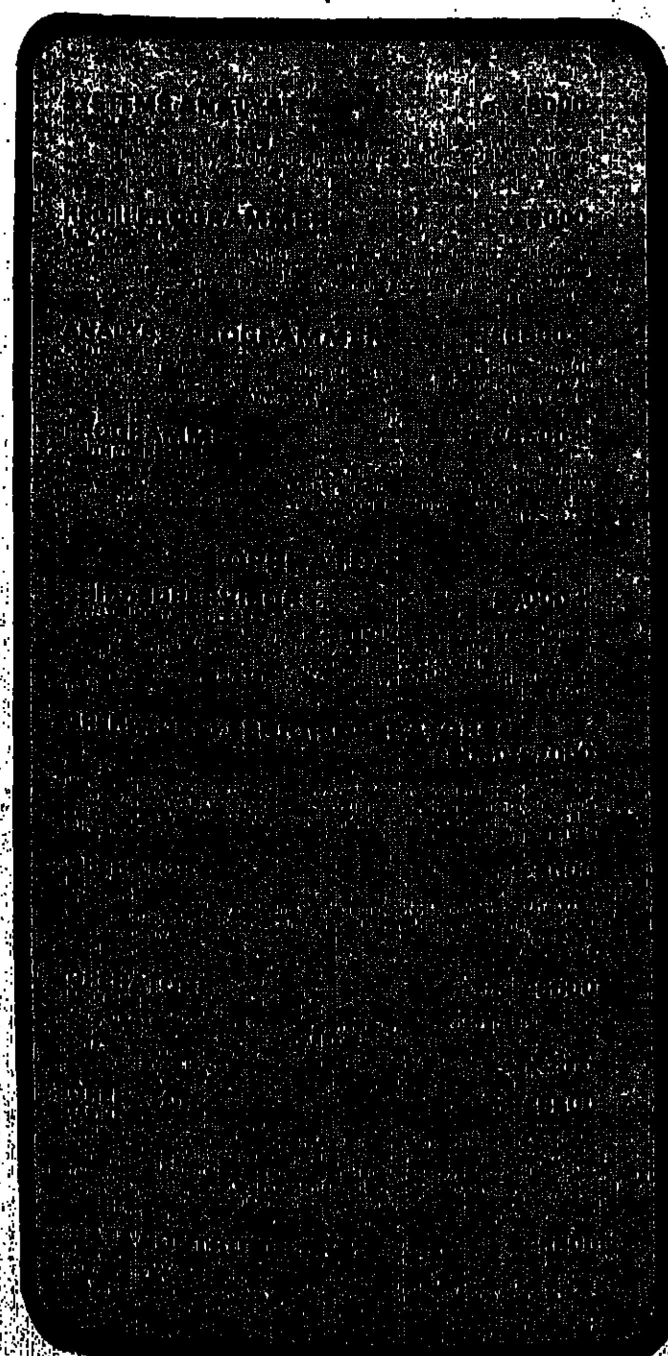

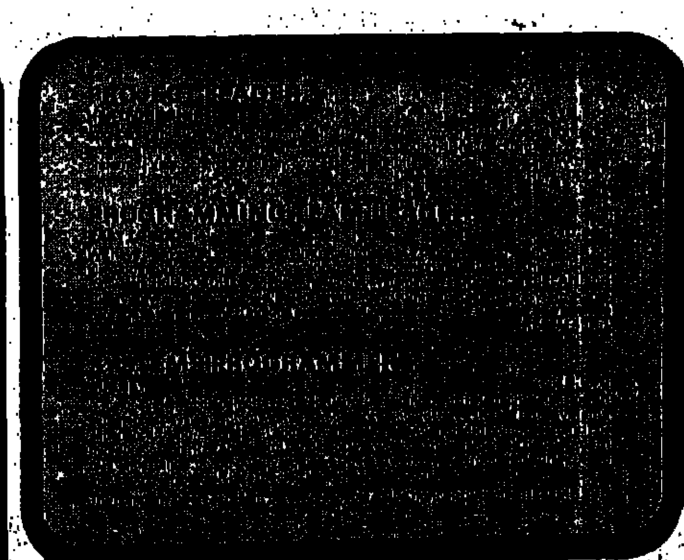

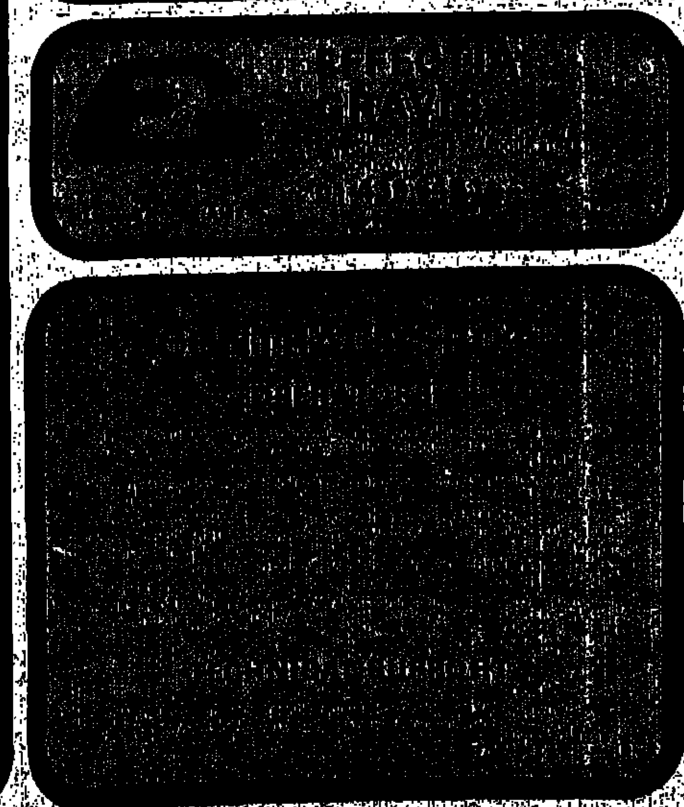

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Contact: Isobel Bruce

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(1988)

BPNZ Representatives will be arriving in London to conduct interviews with interested applicants shortly

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Patricia Hewitt, DAI Limited, Alpha House, Rowlands Way, Wythenshawe, Manchester M22 5RG. Tel: 061-436 3122

Roy Stedman, DAI Gmbh, Herzogstr 61, 6078 Neu Isenburg, Nr Frankfurt, West Germany. Tel: 06102-38386

DAI (2134)

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Saudi Arabia c. £11,000 tax free

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Applicants must have at least 1 year's Programming experience using COBOL, basic JCL experience using MVS JES 2 and knowledge of IBM 3033. Will be required to code and test complex programs, assist in the development of systems feasibility, design programming and maintenance.

The positions are based in Riyadh. 18 – 24 month bachelor status contracts will be offered, including free furnished accommodation, car, medical cover and 30 days paid UK leave every six months.

Telephone for an application form, quoting reference number, ML, to *Gordon Newton, Landavenie Recruitment Limited, Dragon House, The Mall, London, W5 3LS. Telephone No: 01-579 0293* (2158)

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Either write with full career details, or phone for further information, to: Barbara Hawkins, Personnel Department, Data Logic Limited, Westway House, 320 Ruislip Road East, Greenford, Middlesex UB6 9BH. Telephone: 01-578 9111. Or phone 01-235 1535 (24 hours) for further details and an application form.

(2116)

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(2139)

DML

D.P. Manager

West Midlands c. £8,500

Is chairman of the federation on a level with the chief computer in the Autumn, our client is looking to appoint an experienced Operations Supervisor to assist with implementation and subsequently step into the role of D.P. Manager.

The successful applicant is therefore likely to be aged under 35 and will have a background of at least 5 years in D.P. preferably in a business environment – with, ideally, knowledge of COBOL programming. Proven experience of on-line systems will be a decided advantage.

In fact, the company is seeking a good all-rounder with the capacity to provide effective management in all areas.

If you are ready for this important career move, contact Keith Henning on 021 622 9234, or write to:

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Pool Ref W7 721 Grade 4

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The successful applicant will be responsible for the control of the service operations of all peripheral equipment for the maintenance of I.C.L. on the Division's ICL 2903 computer.

The new will set up Quality Computer Manager in the Computer Manager's absence and in addition will be responsible for software and technical manual updates, assist in the production of new systems implementations, and assist in writing I.C.L. macros and DDE format programs.

Some operating may be required outside of normal office hours.

Anglian Water Services Terms and Conditions of Service as applicable to the Authority apply to the appointment.

Further details of the post may be obtained from the Personnel and Administrative Officer at the address below, by 8th August, 1980.

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(2140)

datascene

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INTERESTED?
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Contracts Manager on

01-439 1856

(2069)

Datascene International Ltd.
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London W1R 7FB
Telex: 23251

THE SALES BIT

Persuasion is always better than force

ARE you sitting comfortably? Then I'll begin.

One day the North Wind and the Sun were arguing about which was the stronger. They were unable to agree and decided to devise a means whereby their argument could be settled.

Down in the world below, a man was walking along with a sack held firmly over his shoulders to keep out the cold of a less than tolerable day. The North Wind decided that here was a perfect vehicle for proving his superiority. He therefore stated that he could remove the sack from the man's back more quickly and effectively than the Sun.

The man was shocked by the sudden arrival of a fierce and bitter wind that almost blew him to the ground, but he quickly adjusted to the unexpected assault, grasped the sack tightly, braced himself firmly and walked determinedly into the unwelcome blast. The harder the wind blew, the tighter he held the sack. The fiercer the assault, the more determined he became. Eventually the North Wind realised he was making no progress, at all, and agreed to let the Sun have a go.

The man was as surprised by the sudden change in the weather as he had been by the arrival of the wind. The sky began to clear, the temperature rose, and very soon the man began to ease his grip on the sack and soon felt so warm and relaxed that he took off the sack, lay down under a tree and went to sleep.

I am sure this Aesop Fable has appeared somewhere in the childhood of most readers, but its point would be just as relevant if it were to appear in the middle of a training course for salesmen or managers.

Whether the situation be a difficult negotiation, the admonishment of a delinquent salesman, the settlement of a dispute, or a person-to-person disagreement, one can always rely on aggressive tactics to strengthen the resolve of the protagonist and oblige him to take the opposite route to that being thrust upon him.

As a matter of principle, most people will give less under duress than they will in circumstances of consideration and friendly persuasion.

One of the greatest apparent justifications for the aggressive/autocratic stance is the belief that right is on one's side. It seldom is, in the absolute sense, and the very existence of a dispute is usually a function of one's opponent having an equally strong faith in his own case.

It's amazing how many people put on blinkers in order to handle a difficult negotiation and find it impossible to view the situation from the other's standpoint. This is as applicable to man-management as it is to selling.

Certainly one uses the term "sales aggression", but this should be a "bridled" force closely related to enthusiasm which embraces the whole gamut of selling activity rather than person-to-person communications which typically thrive on resolve, tempered with consideration and sensitivity.

Back to Aesop: The moral is not simply a matter of force versus persuasion; it is also about identifying what people are seeking, what they need, what they want, what will make them happy — not inflicting upon them what one wishes them to have.

The man in the story wanted to be warm, not cold, and no manner of argument about the warmth of a post-douche glow was going to persuade him otherwise.

TRADER

Trader welcomes comments on his column and is happy to consider readers' problems in marketing and selling.

CALLS FOR PAPERS

Comnet 81 in Budapest

PAPERS are invited by October 1 for Comnet 81, a conference that will look at computer networks from the user's point of view. It is to be held next May in Budapest, Hungary. Sponsored by the International Federation for Information Processing and UNESCO, the conference aims to identify the problems associated with using computers remotely, and to suggest solutions.

Contributions are invited on topics including network performance, data crossing national boundaries, new services such as electronic mail and viewdata, network operators' experiences and the work of bodies such as the International Standards Organisation and the Conference of European Post and Telegraph Administrations.

Comnet 81 is a sequel to a similar event in Budapest in 1977. Members of the programme committee include Dr Donald Davies of the National Physical Laboratory, Louis Pouzin of the Institut de Recherche en Informatiques et en Automatique, and Dr Fritz Kühlhofer of the European Centre for Medium Range Weather Forecasts.

Papers and registrations should be sent by October 1 to the organisers, the John von Neumann Society for Computer Sciences, POB 240, H-1388 Budapest, Hungary.

Telecoms software

PAPERS are invited for the Fourth International Conference on Software Engineering for Telecommunication Switching Systems to be held at Warwick University in July next year. Synopses should be sent to the organisers, the Institution of Electrical Engineers, Savoy Place, London, WC2, by September 8.

Puzzle Answer

THE 16-move solution is: 2-3-8-7-6-4-1-2-3-8-4-8-7-6-5-4.

CW Prize Crossword No 6

SOLUTION

Winner of Computer Weekly Prize Crossword No 6 is Laurence Owen of Porthcawl, Glamorgan, who is a senior systems analyst with British Steel at Port Talbot. He receives the first prize of £10. Second prizes of £5 each go to Chris Robinson of Ashampstead, near Reading, who is a support engineer with Digital Equipment, and Mike Harpin of Gloucester, a programmer analyst at RAF Innsworth.

Prize Crossword No 7 will appear on August 7.

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26 S	H	A	N	D	Y		27 A	S	P	H	O	D	E	L

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(2135)

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(2093)

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University of Birmingham

Computer Centre-Systems Group

Computer Officer

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Applicants should have several years' proven experience in systems software. Previous experience in graphics would be advantageous. Higher degree is desirable.

Salary range £4,402-£7,410-£8,769 (under review) plus superannuation.

Maximum starting salary will depend on age, experience and qualifications.

Further information from Assistant Registrar (S. and E.), P.O. Box 363, Birmingham B15 2TT, to whom applications (3 copies), naming three referees should be sent by Friday, 22nd August, 1980.

Please quote reference: CW.

(2117)

UNIVERSITY OF DURHAM

ANALYST/PROGRAMMER

An experienced Analyst/Programmer is required to assist in the design, implementation and maintenance of computer systems within the University Administration and University Library.

Salary will be on the Administrative Scale 1A or 1B (£4402-£8769 or £4402-£7410, both under review) depending on age and experience, with normal pension arrangements.

Administrative systems are based on an ICL 2903/30, and a GEAC 8000 will be installed in the Library in the near future.

The successful candidate will be expected to demonstrate the ability to work with a minimum of supervision. A knowledge of RPG II, Financial and/or Library systems would be an advantage.

Applications (3 copies) naming three referees, should be sent to the Registrar and Secretary, University of Durham, Old Shire Hall, Durham DH1 3HP, from whom further particulars are available. Closing date for applications 8 August 1980.

(2078)

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(2100)

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UNIVERSITY COMPUTING SERVICE

Applications are invited for a post of COMPUTING ASSISTANT in the University Computing Service. Applicants should have a good honours degree or equivalent, preferably together with at least two years' relevant postgraduate experience. A higher degree could be an advantage. The appointment will be for a fixed period of three years.

The Computing Service is responsible for the provision of computing facilities to all departments within the University and has recently acquired an Amdahl V7 mainframe computer and a PRIME 750 Computer. The successful candidate will work principally within the Applications Group which develops, maintains and advises on the use of applications software.

Salary at an appropriate point on the IS Scale for Other Related Staff: £4,402-£7,410 (under review), according to age, qualifications and experience.

Application forms and further particulars may be obtained from the Registrar, The University, Leeds LS2 9JT, quoting reference number 48/28AZ. Closing date for applications, 21 August, 1980.

(2058)

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DOS COBOL + GOOD CICS EXP.

Start beginning of August. Berkshire.

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(2144)

FORCE 8 Computer services
8 Mint Walk Croydon 01-680 3761

ANALYST/PROGRAMMERS
London IBM Cobol/PL1/Mark IV

Tel: Roger Barnes on 01-628 4200
4&5 Copthall Avenue, EC2R 7DA

(2123)

SDA

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Dudley College of Technology

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Further particulars and application forms from the Principal, Dudley College of Technology, The Broadway, Dudley, West Midlands DY1 4AS.

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Centre for Information Science

RESEARCH FELLOW
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Tel: Abingdon 21840 Extension 6399 or 297

Please send me an application form for Senior Computer Operator.
Name ___
Address ___
___ CW (2073)

Culham Laboratory

UNIVERSITY OF SALFORD
COMPUTING LABORATORY

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The University Computing Microprocessor Laboratory provides advice and help to the University research community in the use of microprocessors. Cross assemblers and other tools are supported by the University PRIME configuration.

The post will involve the design and development of microprocessor based systems. Familiarity with microprocessor architecture over a broad range is desirable.

Applicants should have a degree in a relevant discipline and wide experience in the microprocessor field.

Salary on Other Related 1A Scale £6052-£8769 or B Scale £4427-£10284 USS Superannuation.

Further particulars and application forms are available from The Registrar, University of Salford, Salford M5 4WT, to whom completed applications should be returned by 11th August 1980, quoting reference CL/75/CW.

(2102)

UNIVERSITY COLLEGE CARDIFF
ADMINISTRATIVE DATA PROCESSING SECTION

TWO PROGRAMMERS
(Salary scale £4402-£8769)
(Under review)

To work on the development of a Major Financial System to be implemented on a PDP 11/35 computer.

Applicants must have at least one year's experience with commercial applications. A knowledge of RSTS/E operating system and BASIC programming would be an advantage.

Applications in full (2 copies) together with the names and addresses of two referees, should be addressed to the Vice-Principal (Administration) and Registrar, University College, PO Box 78, Cardiff CF1 1XL. Closing date 8th August 1980. Ref. 2070

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G. M. R. OWEN, SALES DIRECTOR

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(2146)

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Belgium: Salary £20K

A European Systems and Software Supplier with a Regional Headquarters in Brussels is seeking several **PL-1 Applications Programmers** for six month and one year contracts. All candidates must have PL-1 programming experience amounting to 2 years' or more in a Database (IMS) and Teleprocessing (CICS) environment. Applications experience should have included stock control and recording, sales budgeting, forecasting and analysis, work in progress and materials control. Although not essential, it is preferable to offer some French language ability for social as well as work purposes. Initial interviews will be held in our offices after which successful candidates will spend one day with the client.

Ref: L/30/A

Real-Time Applications

Greater Manchester: Salary to £10K + Benefits

A well established Systems House specialising in the supply of Industrial Processing and Control Systems requires **Real Time Programmers** for its Manchester office. Applicants with at least two years' real-time programming and systems experience will be considered for these demanding career positions. You will be offered the opportunity of involvement in all stages of software and systems design and implementation. Fluency in either Assembler or BASIC is essential. Preference will be given to those who have worked with a manufacturer or systems supplier. Familiarity with the systems supplied by Companies such as Foxboro, Kent or Ferranti is a further advantage. There are ample opportunities for both national and international travel.

Ref: L/30/B

SNA & Telecommunications

Paris: Salary to £16K

A well-known European Systems Supplier and Consultancy has vacancies at its Paris headquarters for **Systems Programmers, Software Development Specialists and Project Leaders.** Suitable applicants should offer specialist expertise in the area of Data Communications, Message Switching (with particular reference to SNA techniques) and Mini/Micro Software Development. We anticipate that you will be a numerate candidate aged 27-35 years' and preferably have practical experience in advanced distributed processing and networking applications on min-computers or dual processors. Candidates with a good command of the French language will be particularly welcome to apply.

Ref: L/30/C

Software Trainers

Heathrow & Berks: Salary to £10K

A leading manufacturer of mini-computers for both scientific and technical applications seeks several **Software Trainers** for its U.K. Regional Headquarters. Work content will include the staff training of both existing and prospective customers in general D.P. techniques and the individual requirements and capabilities of the Company's Software. Education currently takes the form of product demonstrations, seminars, workshops and of course, inevitable "on the job" learning. The development of software courses in areas not so far covered by the Company will form an essential and integral part of the position. The Company has a stated preference for candidates who can combine previous FORTRAN and/or Assembler programming in a practical environment with past or current experience as a Software Lecturer or Trainer in an academic or manufacturing environment.

Ref: L/30/D

IBM Systems Engineers

Germany and Switzerland: Salary £22K

We can offer outstanding permanent career positions for **Senior Systems Engineers and Project Managers** in Rheinland, Bavaria and Switzerland. Technically you must demonstrate continuous exposure to the implementation and/or support of Data-Base and Tele-processing systems in a large or multi-user IBM Amdahl or Itel site. It is a pre-requisite to offer "hands-on" software experience with IMS DB/DC, CICS/VS, MVS or with the D.B. or T.P. Software of an independent supplier. The Company offers higher than average salaries (even by Continental standards) plus a range of extensive and worthwhile benefits. Interviews can be arranged to meet individual requirements.

Ref: L/30/E

Software Support-Graphics

Home Counties: To £8K + Car

One of the market leaders in the manufacture and sale of graphics terminals and instrumentation devices has a requirement for **Analyst/Programmers.** Successful applicants will be involved in pre-sales support, the installation of software packages and training customer personnel. Candidates should offer at least 2 years' FORTRAN programming experience preferably supplemented by C.A.D. exposure. It is anticipated that you will have a background in Mini-computers, but specific hardware experience is not important. In addition to competitive salaries, our client also offers a company car for all positions.

Ref: L/30/F

Software Consultants

London: Salary to £13K

Our client, a leading International Programming and Systems House, based in Central London, has an urgent requirement for project team specialists. Successful applicants will probably be graduates with a minimum of two years' programming experience on any commercial machine whilst a knowledge of both high-level and low-level languages will be a distinct advantage. This is an exceptional opportunity for candidates who enjoy involvement with customers in developing their systems and solving related business problems. If you have designed at least one complete on-line system or have had project management responsibility then you will be considered for a more senior position.

Ref: L/30/G

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